

AUGUST, 1956

TECHNOLOGY DEPT.

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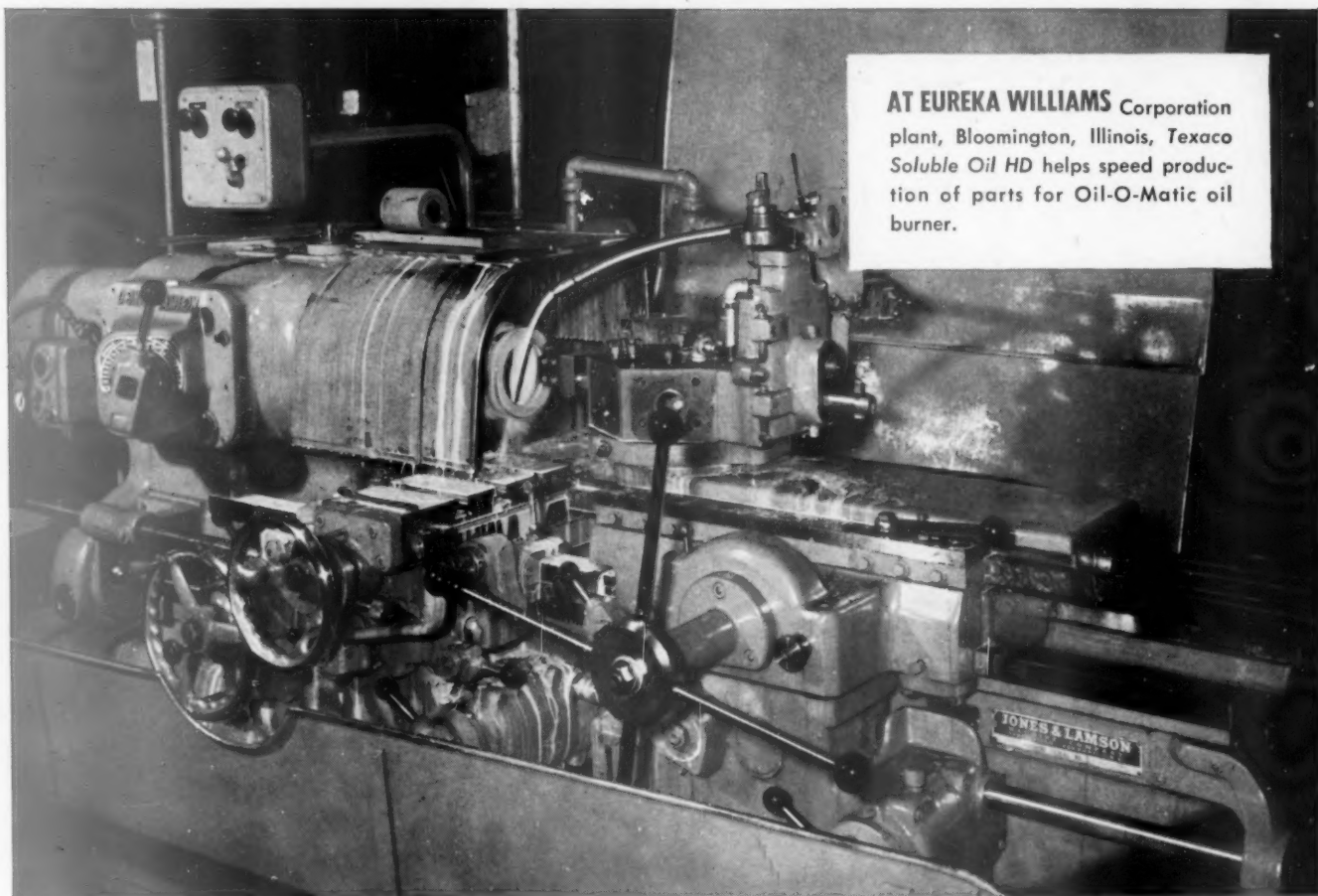
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MECHANICAL VARIATIONS  
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RATINGS AND DIMENSIONS  
PAGE 9



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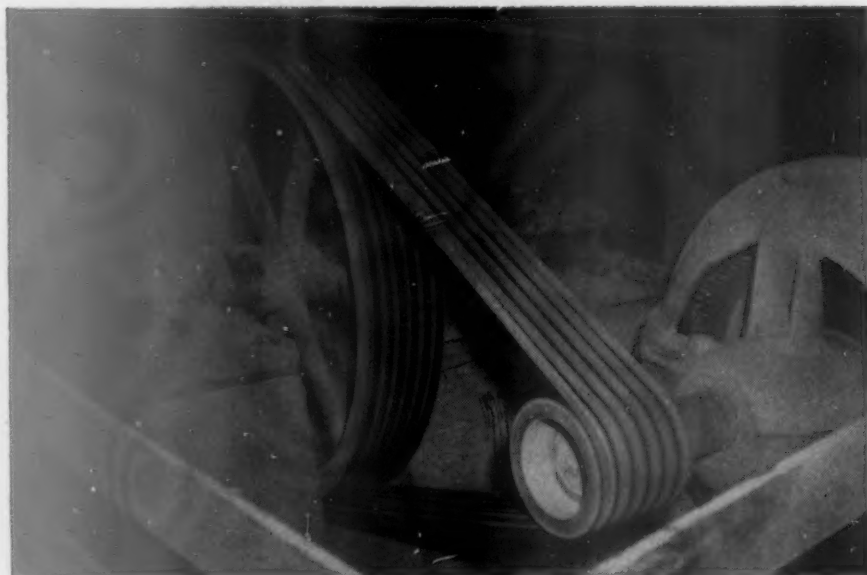
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**INDUSTRIAL PRODUCTS**

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**PURCHASING**



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BPA

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# O-B VALVES

AUGUST, 1956

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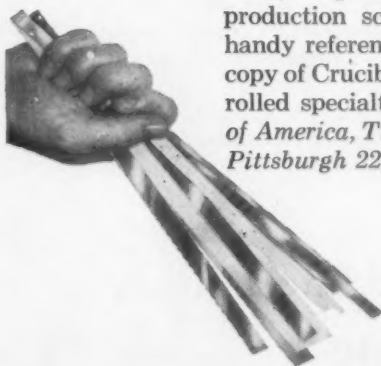


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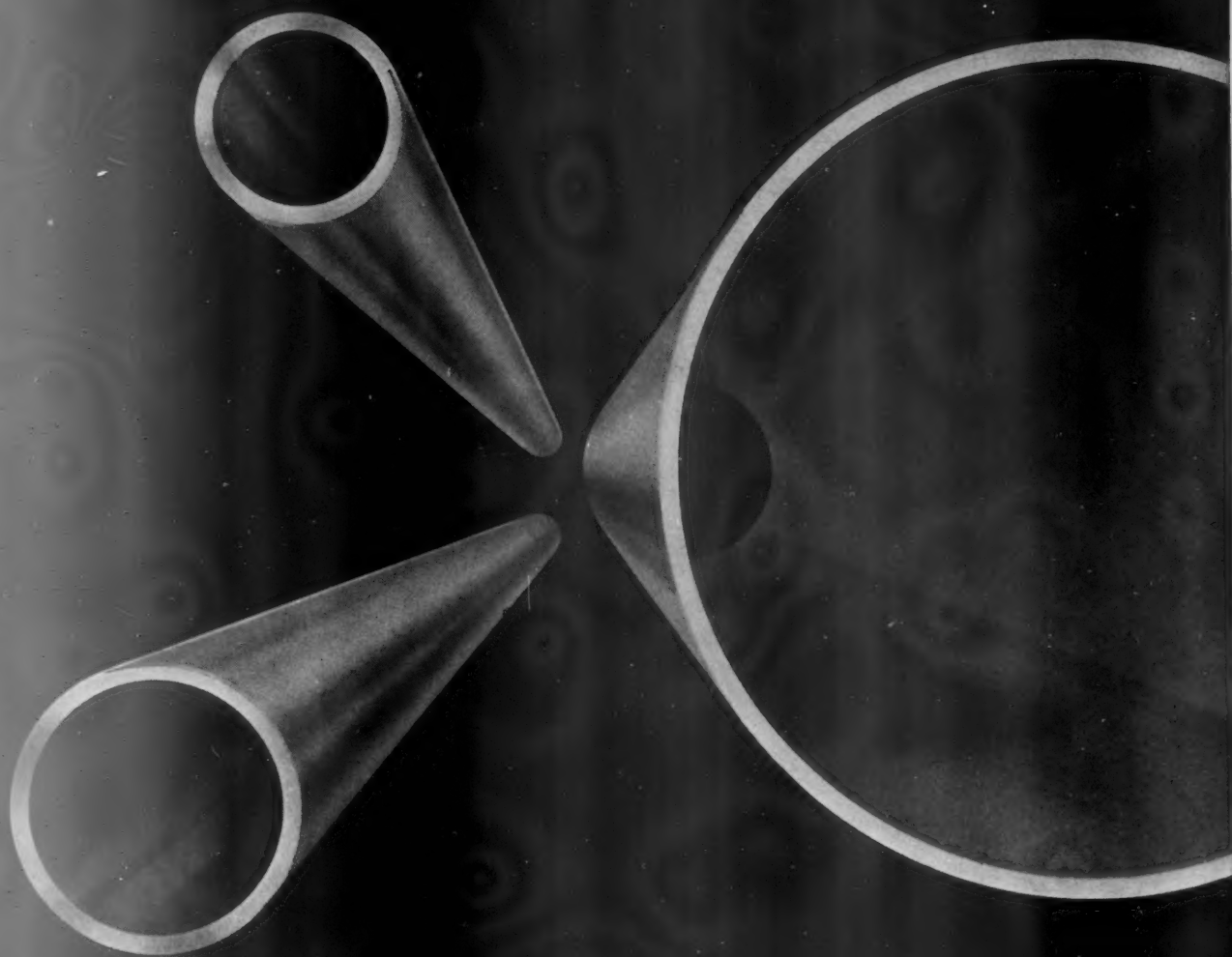
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For More Information Circle No. 161 on Inquiry Card—Page 17

AUGUST, 1956





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# Titanium Tubing

For processing lines carrying fluids of an extremely corrosive nature — look to *Contour Trentweld* titanium tubing for reliable service.

This titanium tubing is completely uniform throughout any cross-section. The weld zone is free from bulging weld bead because Trent's exclusive process — performed with the weld area at the bottom — forms the molten weld metal into the shape of the tubing.

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So, next time you need a strong, light, extremely corrosion-resisting tubing—try *Contour Trentweld* titanium tubing. And remember, it's made by Trent — tube mill specialists.



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TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of Crucible Steel Company of America)

For More Information Circle No. 162 on Inquiry Card—Page 17

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in  
mercury  
light...

## NEW, INCREASED LIGHT OUTPUT FOR 13 WESTINGHOUSE MERCURY LAMPS

Now—through advanced design and manufacturing techniques—the most widely used Westinghouse Mercury Lamps give you more light when new, more light for life.

Look at the following chart. It shows the new boost in initial light output for just two of the most widely used Westinghouse Mercury lamps...

| Lamp          | Initial Lumens |            |
|---------------|----------------|------------|
|               | Old Rating     | New Rating |
| 400-watt E-H1 | 20,000         | 21,000     |
| 400-watt J-H1 | 19,000         | 20,000     |

And there are similar high increases for eleven other popular Westinghouse Mercury Lamps.

But that's only half the story! For not only do these new, improved

Westinghouse Mercury Lamps give increased light output to start with, they also maintain higher light output throughout their long life. For example...

| Lamp          | Approximate Lumens at 4000 Hours |        |
|---------------|----------------------------------|--------|
|               | Old                              | New    |
| 400-watt E-H1 | 15,000                           | 15,800 |
| 400-watt J-H1 | 14,000                           | 14,700 |

These new Westinghouse Mercury Lamps are absolutely unequalled for long useful life. So today, even more than before, Westinghouse Mercury Lamps are by far your best buy for all high-intensity lighting.

This significant advance in Westinghouse Mercury Lamp performance is further evidence of Westinghouse leadership in mercury lighting—one more proof that Westinghouse Mer-

cury Lamps give you "more for your money in mercury light."

Westinghouse Guarantees the service life of all its widely used types of quartz mercury lamps. For full details call your Westinghouse Lamp Representative—or write Westinghouse Lamp Div., Dept. 00-0, Bloomfield, N. J. You can be sure... if it's Westinghouse.

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**Hi-Temp life-time-tight bases**—non deteriorating bonding material eliminates costly problems of loose bases, cracked bulbs, breakage when lamps are removed from sockets.



**Molybdenum Ribbon Seal**—just .005" thick—permit easy expansion and contraction of lead-in wires and bulb material. Result: longer lamp life, fewer early failures.

**WATCH WESTINGHOUSE** WHERE BIG THINGS ARE HAPPENING FOR YOU!

Ask about new Westinghouse WEATHER DUTY (TM) Mercury Lamps!

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AUGUST, 1956

11



## This Crane valve on superheated steam since 1946—with no maintenance

You'll spot cost-saving performance in the record behind this Crane valve—it has been on duty an even decade of years, with no maintenance at all!

Neches Butane Products Company installed this Crane 8-inch, 900-pound Pressure-Seal angle stop-check valve in 1946 in its butadiene plant in Texas. On superheated steam boiler service, this valve has never failed to close tightly and surely—and operate smoothly and easily—with no sticking, no

troubles—no need to go near it with a wrench.

There's no question that dependability is a must in service like this. Minimum restriction of steam flow—plus smooth, positive and quick seating on backflow—*must* be provided for safe, steady boiler operation. And Crane stop-check valves can do it—*have* been doing it for years and years.

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# WASHINGTON REPORT

for purchasing agents

by A. N. Weeksler, Washington Editor

August 1, 1956

## PUBLIC WORKS DECADE

Decade of record level public works spending is projected in the newly enacted long-term highway program. Under the road program, it is planned to modernize the nation's highways—and \$25 billion has been committed to bring the so-called Interstate Highway System up to requirements over the next 13 years.

Actually, the program as conceived will mean that some \$101 billion will be spent on roads. On the Interstate Highways, the Federal Government will pay 90% of cost, and the States 10%.

On primary, secondary and urban roads, the Federal Government will put up half the money in a 50-50 matching program.

This will account for more than half the \$101 billion total, and the remainder represents non-Federal aid roads, private and toll roads which will be financed through the usual channels.

## SUPPORT TO BUSINESS LEVEL

Significance to the Purchasing Agent is considerable. From the economic side, a large public works program will give considerable underpinning to the overall level of business.

Average annual spending on roads during the years 1951 through 1955 was \$3.5 billion. This year the total will run \$5.7, next year some \$7 billion, and 1958 it will reach \$8 billion.

In addition to the money actually spent on roadbuilding, roads stimulate other construction. Example is the New York Thruway, which is estimated to have stimulated some \$150 million additional expenditures for industrial and commercial construction along its route—or the new circumferential route No. 128 in Massachusetts, which is reported to have led to the expenditure of an additional \$100 million in building dollars.

## MATERIALS REQUIREMENT LARGE

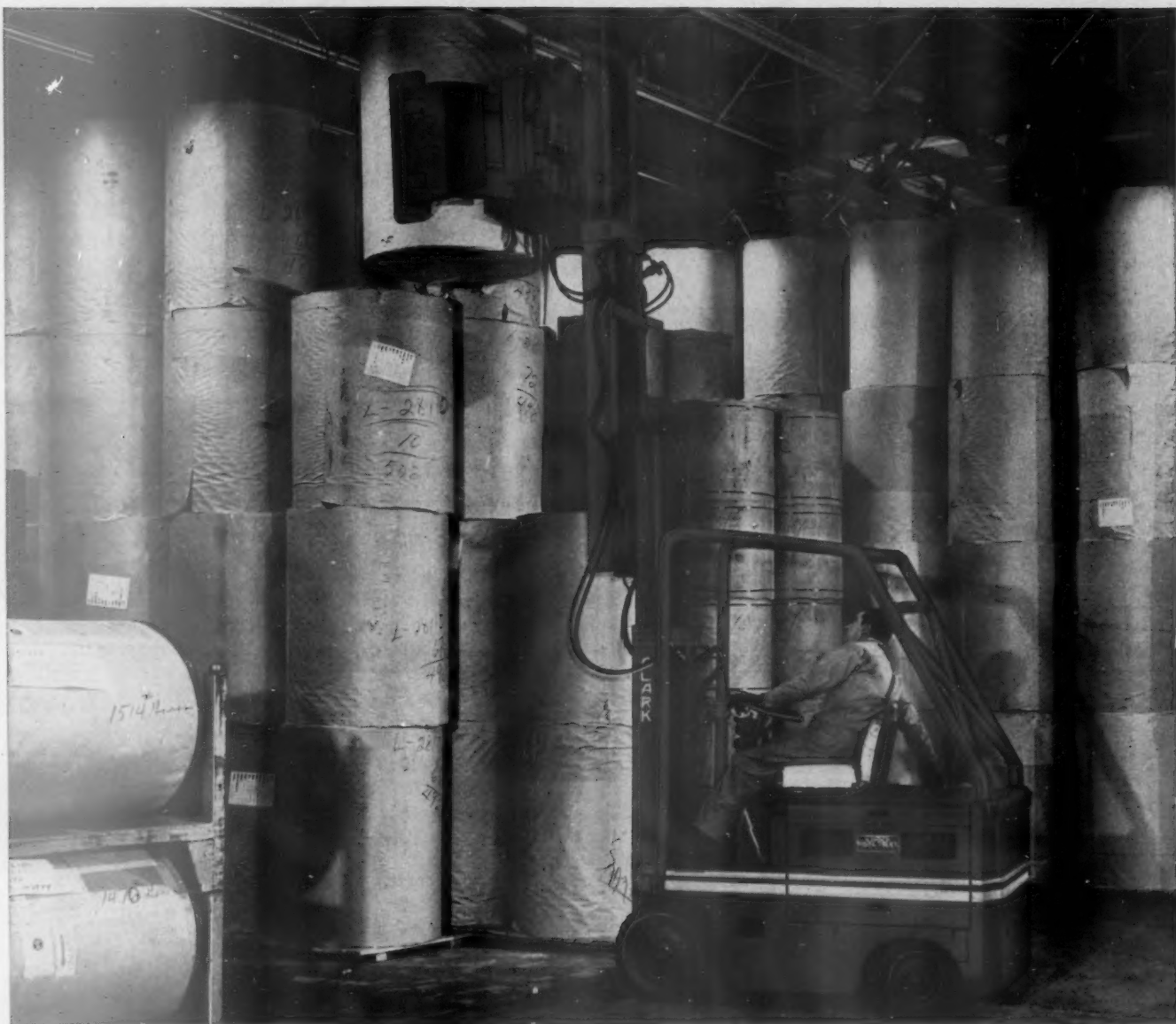
In materials, the road program will directly stimulate the need for cement, for aggregate, for bituminous materials, for steel shapes and plates, for steel structurals, reinforced concrete culverts, corrugated metal pipe.

It will further stimulate the demand for construction equipment of all types, but especially in the heavy construction lines.

Traffic signs, marking materials, lumber, timber products, clay products, petroleum products and explosives will be needed.

## OTHER CONSTRUCTION PLANNED

Road program is the largest dollar volume of public works ever sanctioned in one package—and it comes at a time when other construction of a public works nature is being expanded. There is a large volume of public building construction underway on the lease-purchase basis undertaken by this Administration. The rate of school building construction has been increased, but will have to be further multiplied to meet what has been described as a \$16 billion requirement.



A big reason for the Clark Electrics at Minnesota Mining & Manufacturing Company is the dependable service offered by Material Handling Engineers, Minneapolis. This service is typical of all Clark dealers.

## Clark Electrics at Minnesota Mining & Manufacturing *and there's a good reason . . .*

They use a double upright in 3M Company's paper warehouse. Equipped with a rotating roll clamp, the Clark Electric will stack to 190 inches, yet go through a regular 74 inch door. A standard upright would require a down height of 120 inches. That's one answer, but why a Clark *Electric*?

Electric trucks move material at the lowest cost per ton mile—and with Clark Electrics, you get the electric truck with the power saving dual field motor that provides more ton-miles per battery charge.

But it takes more than features. How about 3 years from now, or 5 years, or 10? That's when you depend on service—fast, local service.

And that's where your local Clark dealer comes in. He offers prompt mobile service for emergencies, the

largest supply of service parts in the industry—genuine Clark parts that are warranted and guaranteed for quality. And he provides a completely equipped shop for rebuilding, a fleet of rental trucks to help you over peak work loads. Fact is, he offers a complete service package. Look in the Yellow Pages under "Trucks, Industrial" for the Clark dealer nearest you.

A BETTER BUY WITH LOCAL SUPPLY—*Genuine Clark Parts*

**CLARK®  
EQUIPMENT**

Industrial Truck Division  
**CLARK EQUIPMENT  
COMPANY**  
Battle Creek 23, Michigan

# WASHINGTON REPORT

continued

## ECONOMIC IMPACT WATCHED

Public works program as large as now projected is pretty much an unknown factor in terms of effect on the economy.

At one time public works on a small scale was the historical antidote to recession; it gave employment on a pick-and-shovel basis to the jobless.

When construction became mechanized, the attitude developed that its usefulness as an economic stimulant had diminished.

New concept is that public works may give less employment per construction dollar now than in the pick-and-shovel days, but that construction dollars now constitute one of the most direct methods of getting money into the spending stream. Construction dollars funnel quickly into the hands of materials suppliers and equipment manufacturers, and have a quick impact.

At the same time, public works are a direct counter to any trend toward deflation—and a perfect offset to any drop in military spending.

## PROGRAM BASED ON NEED

These factors were not significant in getting the public works program underway.

While the Bureau of Census forecast the increase in the nation's population, and the Department of Commerce made repeated announcements that the larger population would create all kinds of new demands—the real impact of population increase is just beginning to be felt.

On roads, the nation's highways have become so crowded that the lack of facility has seriously limited the market for autos and trucks.

The birthrate in the last 10 years has made it clear that schooling facilities are not adequate to handle the load—but there has been a tendency to view the increase as something very temporary.

Now, there is an acceptance of the problem of adjusting to an expanded population and an expanded economy.

## INDUSTRIAL EXPANSION TO CONTINUE

Industry was in the forefront of the expansion. While industrial expansion was stimulated by tax inducements—such as accelerated amortization of plant facilities—this applies only to a portion of the large-scale plant expansion spending.

Basically, the expansion of plant has been geared to meeting expanding markets, and to the competitive need for modern plant facilities as a prime requisite for keeping cost of production low to meet competition.

## PRODUCT MIX WILL CHANGE

Public works will take large tonnages of materials—but are not a direct offset to a drop in demand for autos. Outlook now is for new model autos to revive consumer interest in buying—but most forecasts indicate that volume next year is not likely to be much different from this year.

Similarly, the other soft spot in the economy—the rate of new housing starts—is not expected to rebound suddenly, either this year or next.

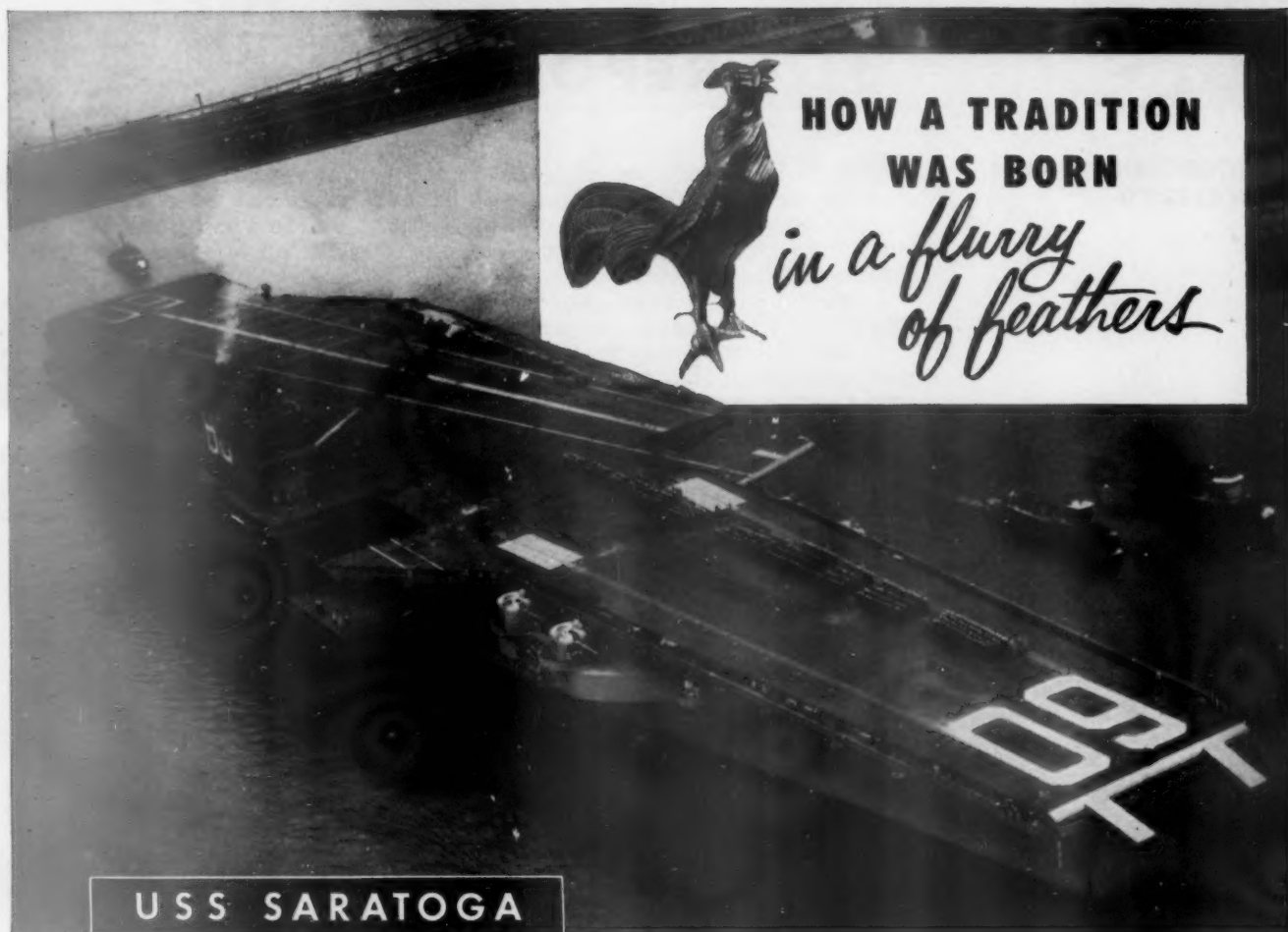
Volumes in both houses and autos will be large—but not as large as during the boom year of 1955.

What is expected is a shift—with the gross national product moving up, but with the total being achieved through a changing product mix.

This is not unusual—in fact, the trend in the postwar period seems to have been along the lines of large volumes in one or several industries to satisfy requirements and then a drop in these volumes, with the economy being carried forward by other industries.

As an example, immediately after the war there was a big surge in soft goods demand, followed by housing and appliances—then the Korean war boom, followed by housing, auto and appliance boom. Currently, the biggest strength is in plant expansion. This will carry over to next year, but public works volumes will then begin to generate big construction volume.





USS SARATOGA

The symbol, and the spirit, of the fighting gamecock lives on with the commissioning of the powerful aircraft carrier, *USS Saratoga*.

The incident which gave birth to this 142 year old Navy tradition took place on the decks of the first *Saratoga* as she closed for action against four men-o'-war in 1812. In the opening minutes of the engagement an enemy ball landed on deck—crashing into a coop containing a gamecock brought aboard by a sailor.

With a flurry of feathers, the startled bird flew to the rail and, as if expressing his personal indignation, crowed lustily and defiantly. Taking this as an omen of good luck, the outnumbered and outgunned American ship entered the battle with new courage and completely won the day.

The Navy's newest aircraft carrier is the fourth ship to bear the name *Saratoga* and adopt its fighting symbol. As aboard its sister aircraft carriers, the *USS Forrestal*, *USS Independence\**, and *USS Ranger\**, Walworth Valves and Fittings are installed. We are proud of the many contributions that our products and engineering skills have made to these outstanding vessels.

Walworth products installed aboard these ships include Pressure-Seal Cast Steel Gate, Globe, and Angle Valves, Fabricated Cast Steel Manifold Valves, Cast Steel Y-Globe and Angle Valves, Bronze Gate, Globe, Angle, and Check Valves and thousands of Walworth pipe fittings including Walseal® Fittings, Flanges, and Unions.

\*Now under construction.

# WALWORTH

60 East 42nd Street, New York 17, New York

SUBSIDIARIES: ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION M & H VALVE & FITTINGS CO.  
 SOUTHWEST FABRICATING & WELDING CO., INC. WALWORTH COMPANY OF CANADA, LTD.

For More Information Circle No. 166 on Inquiry Card—Page 17

# SPECIAL SERVICE FOR READERS

You will want additional information about the equipment, materials, services or methods described or advertised in this issue of PURCHASING.

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Circle numbers of items described or advertised in this issue. AUGUST, 1956  
(not good after 10-15-56)

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Additional information wanted



information for your

# catalog files

## WELDING ALUMINUM, OTHER NON-FERROUS METALS

Welding equipment, "Fillerarc," making possible consumable electrode gas-shielded welding of very thin sections of aluminum, stainless and other metals is treated in brochure, GEA-6028A.

General Electric

Circle No. 1 on Inquiry Card—Page 17

## MORE ACCURATE GAGES LAST LONGER

A 4-page illustrated brochure describes "Go and Not Go" reversible plug gages with twice normal gage life. Gaging members reverse to present new gaging surface. Check holes sizes .030" to .760".

Pratt & Whitney Co., Inc.

Circle No. 2 on Inquiry Card—Page 17

## ORDER BRONZE BEARINGS FROM STOCK

Stock List S-56 gives the dimensions of 1050 different sleeve, flange and thrust bearings carried by dealers. They range in size from 1/8" to 4" ID and are self-lubricating.

Chrysler Corp.

Circle No. 3 on Inquiry Card—Page 17

## JOIN ANYTHING

Punched for loose-leaf binding, a 30-page catalog shows size ranges and specifications of a complete line of fasteners: screws, bolts, dowel pins, etc. Socket screw keys are covered.

Standard Pressed Steel Co.

Circle No. 4 on Inquiry Card—Page 17

## GET BRIEFED ON SILICONES

A 12-page reference guide describes 150 of the most generally used silicone products, 18 of which were introduced within the past 12 months. They are grouped by nature and indexed by usage.

Dow Corning Corp.

Circle No. 5 on Inquiry Card—Page 17

## STRUCTURES UNLIMITED

A 2-color, well illustrated catalog shows how a wrench and cutter convert steel slotted angle to useful equipment anywhere in a plant. Slots and holes permit infinitely varied structures.

Acme Steel Co.

Circle No. 6 on Inquiry Card—Page 17

## STRIPPED BARE

A 14-page, vest pocket sized booklet gives procedures for 4 stripping methods—steam gun, hot flow-on, cold spray and tank. It tells what materials remove paint, lacquer, enamel.

Oakite Products, Inc.

Circle No. 7 on Inquiry Card—Page 17

## DON'T DO IT OVER AND OVER

How corrugated boxes eliminate unpacking and re-packing merchandise is explained in a 32-page booklet with 20 photos. Manufactured products are packaged in unit ultimate customers buy.

Hinde & Dauch

Circle No. 8 on Inquiry Card—Page 17

## HOW TO KEEP 'EM ROLLING

Invaluable information on precision roller chains and sprockets will be found in a fully illustrated 148-page booklet, No. 2457. It tells how to choose right roller chain for a given conveying job.

Link Belt Co.

Circle No. 9 on Inquiry Card—Page 17

## LIMITLESS OPPORTUNITIES

A booklet, "Opportunities Unlimited," covers numberless applications where "Trufin," an integrally finned tube can be used, such as in processing, electrical industries, etc.

Wolverine Tube

Circle No. 10 on Inquiry Card—Page 17

# catalog files

## WHICH WELDING EQUIPMENT IS BEST?

Specifically compiled as a buyer's guide, a 20-page illustrated bulletin (GEC-1033) covers all types of welding equipment, electrodes and accessories. Their various uses are analyzed.

**General Electric**

Circle No. 11 on Inquiry Card—Page 17

## DO YOU USE COMPRESSED AIR?

Catalog No. 18 in 8 profusely illustrated pages covers a full line of hose couplings, clamps, nipples, valves, and manifolds for general industrial applications and pneumatic tools.

**Hose Accessories Co.**

Circle No. 12 on Inquiry Card—Page 17

## FASTEN ALMOST ANYTHING

A catalog contains dimensional data on 1388 standard semi-tubular, full tubular and split rivets; bag studs and rivet caps. They come in many metals and fit most fastening needs.

**Chicago Rivet & Machine Co.**

Circle No. 13 on Inquiry Card—Page 17

## RECONCILING MOTOR RATINGS

A condensed motor catalog gives in 4 pages essential data on standard motors from 1/20 to 1000 hp. There is a complete cross reference of old and new N.E.M.A. hp and size ratings.

**Marathon Electric Mfg. Corp.**

Circle No. 14 on Inquiry Card—Page 17

## PIPE NIPPLES OF ALL TYPES

Catalog No. 755 carries full information about every class of pipe nipples made from metals or plastics. List prices, weights and A.S.T.M. specifications are supplied.

**Pittsburgh Nipple Works**

Circle No. 15 on Inquiry Card—Page 17

## PUNCHING ANY SHAPED HOLE

A 2-color catalog describes and illustrates perforating units for press and press brake setups to punch

round or shaped holes in sheets or angles up to 1/4" thick. Shut height is 8 3/8"; die, 3 1/2".

**Punch Products Corp.**

Circle No. 16 on Inquiry Card—Page 17

## RELAYS FOR INDUSTRY

Six general types of relays, originally servicing telephones, but now available for industrial applications, are covered in a 24-page catalog. Operating times range from .008 to .020 secs.

**Stromberg-Carlson**

Circle No. 17 on Inquiry Card—Page 17

## SMALL, BUT SWITCH LARGE LOADS

Catalog No. 75a devotes 16 fully illustrated pages to a wide variety of subminiature switches that handle high electrical loads on both a-c and d-c. They are listed at 5 amp, 125 or 250 v.

**Micro Switch**

Circle No. 18 on Inquiry Card—Page 17

## CLOSE TOLERANCE TUBING

Cold drawn mechanical, capillary and hypodermic stainless steel tubing from .008" to 1" OD, as well as nickel and nickel alloy tubing from 1/32" to 1" OD forms the text of a 12-page brochure.

**J. Bishop & Co.**

Circle No. 19 on Inquiry Card—Page 17

## MAKE TOOLING FIT JOB

Throwaway insert tooling, with a variety of standard elements to make semi-specialized tooling fit individual jobs, is covered in a 16-page, 2-color catalog. Holders use 3 tip sizes.

**Valentine Metals Corp.**

Circle No. 20 on Inquiry Card—Page 17

## USING RIGHT SANDPAPER NO PROBLEM

A pocket-size booklet (16-pages) offers help to the shop worker in choosing and correctly using the proper sandpaper for surface finishing of wood, plastics and metals.

**Behr-Manning**

Circle No. 21 on Inquiry Card—Page 17

## POWER UNDER CONTROL

Two-directional valves that meet desired control needs for linear and rotary power transmission are discussed in bulletin No. 80200 (16 pp). They are designed for fluid systems up to 3000 psi.

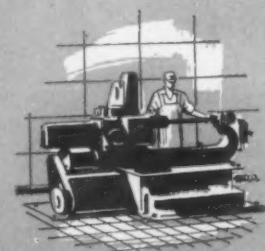
**The Oilgear Co.**

Circle No. 22 on Inquiry Card—Page 17

**Circle Card Opposite Page 17  
to Obtain These Catalogs  
Additional Catalogs on Page 20**

# A complete line of Roller Bearings . . .

*For every field of transportation and industry*

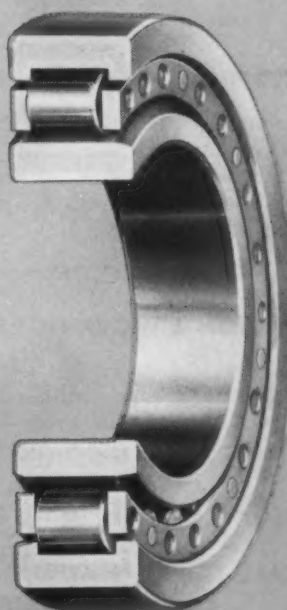
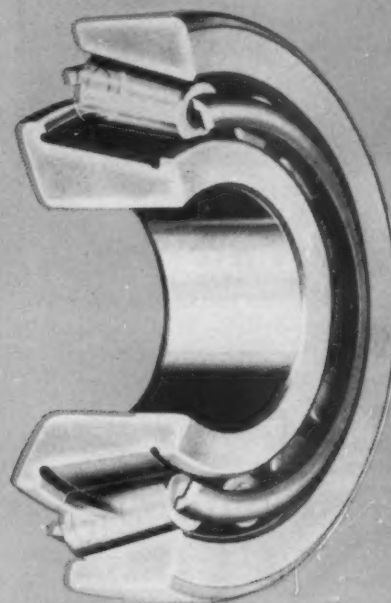


## **Job-tailored in a wide range of sizes to fit your specific needs**

Aircraft? Automobiles? Earth-moving or farm equipment? Whatever you make, if your product uses straight or tapered roller bearings, Bower can meet your specifications exactly. For dependable Bower bearings are virtually custom-built to the job . . . engineered and sized to match any requirement.

Important, too, are exclusive Bower design features that assure long life, top performance, *less maintenance*. And when you specify Bower bearings you can always be certain of the highest quality materials and workmanship. These reasons, of course, are why Bower straight, tapered and journal roller bearings are used by leading manufacturers everywhere—for any application.

Let a Bower engineer give you full details of the complete Bower line. Call him in while your product is still in the design stage.



# BOWER

**ROLLER BEARINGS**

BOWER ROLLER BEARING DIVISION

FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICH.

AUGUST, 1956

For More Information Circle No. 167 on Inquiry Card—Page 17

19



# catalog files

## LATEST IN RIVETS

The latest in rivets, the "Versa-Rivet," a blind type, is described in a 4-page folder, TL-118. It has wide grip range, positive hole fill, high clinch and uniform stem retention.

**Townsend Co.**

Circle No. 23 on Inquiry Card—Page 17

## TURRET TOOL SLEEVES, SOCKETS, HOLDERS

Bulletin 7-50 describes and gives specifications for precision sleeves, extension sockets, "use-em-up" sleeves and turret tool holders. Made of stressproof steel, they preserve work accuracy.

**Scully-Jones & Co.**

Circle No. 24 on Inquiry Card—Page 17

## WEATHERPROOF LAMP BALLASTS

Designated GEC-983H, an illustrated bulletin contains new data on fluorescent lamp ballasts that are weatherproof. A special zinc-plate, bonderize and paint finish protects against rust.

**General Electric**

Circle No. 25 on Inquiry Card—Page 17

## IMAGINATION A WORK HORSE

A 20-page illustrated booklet shows how use of a little imagination can utilize different types of tapes—plastic, rubber, cloth, etc.—to effect numberless production and packaging jobs.

**Johns-Manville**

Circle No. 26 on Inquiry Card—Page 17

## THIN WALL TUBING HAS MANY USES

Tubing, in many metals, in OD sizes  $\frac{5}{8}$ " to  $2\frac{1}{2}$ " and wall thickness up to .035 is covered in Data Memo No. 4. Among its many uses are: aircraft ducting, fuel lines, metal hose, etc.

**Superior Tube Co.**

Circle No. 27 on Inquiry Card—Page 17

## HAVE YOU WIRING PROBLEMS?

Compiled as a convenient reference to an entire line of wiring equipment, catalog No. 156 indexes

all product groups and related items. It describes wireways, cutout boxes, bar hangers, etc.

**Keystone Mfg. Co.**

Circle No. 28 on Inquiry Card—Page 17

## ANTICIPATE HEATING NEEDS

A comprehensive catalog, GN-56, covers a complete line of gas-fired industrial heating equipment. Capacities range from 25,000 to 250,000 Btu. Construction details and dimensions are supplied.

**Reznor Mfg. Co.**

Circle No. 29 on Inquiry Card—Page 17

## SOLENOID VALVES FOR ALL SERVICES

Engineering information, flow charts, operation details on a complete line of solenoid valves are contained in a 36-page illustrated bulletin, No. 201. A chart helps select right valve to use.

**Automatic Switch Co.**

Circle No. 30 on Inquiry Card—Page 17

## WORK ACCURACY WORRIES VANISH

Air gages using a balanced air system form text of 2-color catalog, No. 56D. Calibrated scale allows gages to be set with one master and extra stability eliminates creep or drift after setting.

**Federal Products Corp.**

Circle No. 31 on Inquiry Card—Page 17

## NAME, NUMBER NO SECRET

Marking machines that solve all problems of marking, graduating, embossing or numbering metal products are described, with hundreds of illustrations of applications, in a 3-color catalog.

**Noble & West Mfg. Co.**

Circle No. 32 on Inquiry Card—Page 17

## IDLERS TO SPEED CONVEYING

Specifications for the "Limberoller," a flexible, single-roll conveyor idler suspended to form a natural troughing catenary are given in a 12-page booklet. It speeds bulk material moving.

**Joy Mfg. Co.**

Circle No. 33 on Inquiry Card—Page 17

**Circle Inquiry Card Opposite Page 17**

**to Obtain These Catalogs**

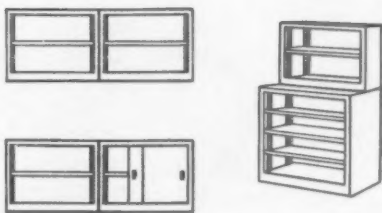
# two outstanding winners

# BORROUGHS

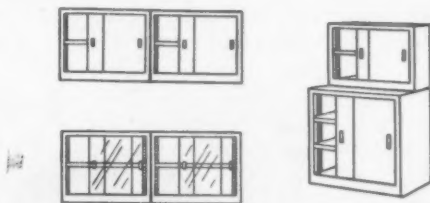
## "29" and "42"



Here are two of Borroughs' most popular products. Both the "29" and the "42" are available with steel or glass sliding doors which, if desired, can be removed in a few seconds . . . just lift—tilt—and take them out. All units have sliding shelves that are adjustable without bolting. Cabinets are ideal for storage or books. Many are used in the home as well as the office. You can make many delightful arrangements with these units . . . the sketches here show but a few. And speaking of colors, you have your choice of five—spring green, dark green, gray, fall tan, and brown. All cabinets are 38 $\frac{1}{4}$ " wide outside and are available in depths of 12" and 18".



Look at these attractive setups, with and without doors. See how you can place two 29" cabinets side by side, or a 29" x 12" cabinet on top of a 42" x 18". Regardless of the combination, you create a good looking piece of furniture.



send for catalog

## BORROUGHS MANUFACTURING COMPANY

A SUBSIDIARY OF THE AMERICAN METAL PRODUCTS COMPANY OF DETROIT

3014 NORTH BURDICK **amp** KALAMAZOO, MICHIGAN

**amp** Plants and other Subsidiaries: (American Metal Products Co.—Detroit, Michigan—Union City, Tennessee) (AllianceWare, Inc.—Alliance, Ohio—Kilgore, Texas—Colton, California) (General Spring Products, Ltd.—Kitchener, Ontario, Canada) (Tube Reducing Corp.—Wallington, New Jersey)

Manufacturers of quality products for automobiles, trucks, aircraft, offices, factories, warehouses, and homes:

For More Information Circle No. 168 on Inquiry Card—Page 17

# suppliers

## in the news

William D. Rohlf and Merle W. Semisch have been named southeastern sales representatives for **The Eagle Lock and Screw Co.**,



W. D. Rohlf



M. W. Semisch

**Terryville, Conn.**, a subsidiary of Bowser, Inc. Both men will cover Georgia, Tennessee, Alabama, Mississippi and Florida.

The appointment of Harold W. Rowe as Detroit district sales manager has been announced by **Hinde & Dauch Paper Co.**, Sandusky, O.



H. W. Rowe

**I-T-E Circuit Breaker Co.**, Philadelphia, has appointed Robert D. Cleaves manager of utility sales. At the same time, it was announced that Hugh P. Maxwell has been made manager of distributor sales.

Robert M. Schreiber is now a sales representative for **Tygart Steel Division, Alton, Inc., McKeesport, Pa.** He will cover West Virginia, Virginia and Kentucky.

**Air Reduction Co., Inc.**, has moved to the new Socony-Mobil Building, 150 E. 42nd St., New York City.

L. W. Elliott is now sales manager of **Griffin Mfg. Co., Erie, Pa.**

**Vickers Inc.**, Detroit, has appointed W. F. Driver as manager, industrial products sales.



W. F. Driver

**Chase Bag Co.**, Chicago, has made Lee S. Ralph sales manager of its St. Louis branch.

**Magnethermic Corp.**, Youngstown, O., has named William K. Stamets Co. as representative in northern Ohio, western Pennsylvania and West Virginia.

Fred Ullberg, Jr., has been made vice president in charge of sales for **T. J. Cope, Inc.**, Collegeville, Pa.


**All-State Welding Alloys Co., Inc.**, White Plains, N. Y., has announced the election of Kenneth V. Lutz as vice president in charge of sales.

Fred C. Leeming is now Los Angeles district sales manager for **Superior Steel Corp.**, Carnegie, Pa.



F. C. Leeming





# Well on the way

with

# AMWELD®

## AIRCRAFT COMPONENTS



The process of manufacturing today's super power jet aircraft engines is the assembling of the finest engineering and production skills into a masterpiece of American ingenuity.

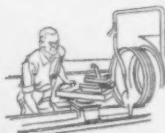
The prime contractor must be concerned with the ability of hundreds of sub-contractors to produce components to the rigid quality demanded by aircraft specifications.

*American Welding supplies welded rings and components to major U. S. jet engine manufacturers.*

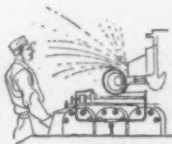
Let Amweld's Industrial Products Division study your problem in circular welded components. Better yet, send us your blueprints and then your production can be "well on its way with Amweld."



WELDING



FABRICATING



MACHINING

THE AMERICAN WELDING & MANUFACTURING CO.

460 Dietz Road

Warren, Ohio



# AMERICAN WELDING

# suppliers

The appointment of T. W. Sharp as manager of the Industrial Products Department, has been announced by **Bakelite Co., New York**, a division of Union Carbide and Carbon Corp.

To provide improved service for customers in Alabama and western Florida, **Mine Safety Appliances Co., Pittsburgh**, has opened a new office and warehouse at 2500 12th Ave., N., Birmingham, Ala.

**Bruce Products Corp., Howell, Mich.**, has named Roy Wiley its Chicago and northern Illinois representative.

Russell E. Petersen is now industrial sales manager of the Anaheim, Calif., plant of **Rinshed-Mason Co., Detroit**.



R. E. Petersen

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Additional "Suppliers in the News" will be found following the Industrial Development section

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An entirely new factory sales and service branch has been opened in Harrisburg, Pa., by **The Black & Decker Mfg. Co., Towson, Md.**

Edward J. Anderson has been made a sales engineer for the mid-western states in the Chicago office of **Sandvik Steel, Inc., Fair Lawn, N. J.**

**Diamonite Products Division, U. S. Ceramic Tile Co., Canton, O.**, has appointed two new sales representatives for Diamonite oxide cutting tools. **Wetzel Tool Co., East Hartford**, will cover the state of Connecticut. **Jack E. Dustman & Associates** will handle most of Indiana.

**Alton K. Marsters** is now vice president in charge of sales for



A. K. Marsters

**Bausch & Lomb Optical Co., Rochester, N. Y.**

**Seth M. Snyder** has been appointed manager of the Charlotte, N. C., district sales office of the Boiler Division, **The Babcock & Wilcox Co., New York**.

The appointment of **Charles V. Stevens** as sales manager has been announced by the **S. W. Card Mfg. Co., Mansfield, Mass.**, a division of Union Twist Drill Co.

**American Agile Corp., Cleveland**, has announced that **William Kriewall** has joined the company as a sales engineer. He will cover southern Ohio and western West Virginia.

The new Iowa-Illinois district sales manager of **Delta Power Tool Division, Rockwell Mfg. Co., Pittsburgh**, is **Elmer D. Hartig**.

**Paul M. Thomas** is now mid-western regional manager for **Chase Brass & Copper Co., Waterbury, Conn.**, a subsidiary of **Kennecott Copper Corp.** Succeeding Mr. Thomas as district manager in Dallas is **Alfred M. Johnson**, a salesman in the St. Louis office.

**W. J. Reed** has been named district manager of the Cleveland office by **Alloy Metal Wire Co., Prospect Park, Pa.**, a division of **H. K. Porter Co., Inc.**

The appointment of **Douglas T. Keltz** as field engineer for New Jersey has been announced by **Hunter Spring Co., Lansdale, Pa.**

**The Lima Electric Motor Co., Lima, O.**, has opened a new branch office at 6432 Cass Ave., Detroit. **Anthony L. Pellegrini** heads the new branch.

**George H. Page** has been appointed to the board and elected vice president of sales by **The Thompson Electric Co., Cleveland**.

The appointment of **Richard D. Keller** as assistant sales manager of the machine tool division has



R. D. Keller

been announced by **Pratt & Whitney Co., Inc., West Hartford, Conn.**

**Kennametal Inc., Latrobe, Pa.**, has named **Roger McCray** product sales manager.

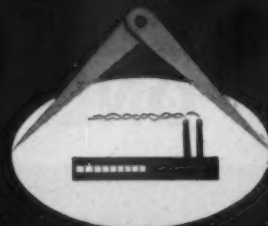
For More Information Circle No. 170 on Inquiry Card—Page 17 →

PURCHASING

Using

# DU PONT ELASTOMERS

## NEOPRENE-HYPALON®



in Industry

### HYPALON® tank linings for strong oxidizing agents

Now a wide range of chemicals can be safely handled by storage tanks and shipping containers for long periods. The secret is a lining made of HYPALON, Du Pont's new synthetic rubber. Tank linings of HYPALON have extra-high resistance to chemicals—even the strongest oxidizing agents have little effect on linings of HYPALON.

But exceptional chemical resistance is just part of the story: HYPALON also withstands temperatures from 250°F. to 350°F. It is *completely unaffected* by ozone and can take prolonged exposure to weathering and sunlight without deteriorating.



**TANK LINED** with HYPALON for storage of calcium hypochlorite. HYPALON is applied by standard lining methods, adheres firmly.

HYPALON can provide extra-high durability to products exposed to severe service conditions; such as hose for handling strong acids and hot fluids; gaskets and packings in high-temperature service; protective coatings for metal and masonry; and many others. To become acquainted with Du Pont HYPALON—just clip and mail coupon.

### Flexible NEOPRENE idlers for conveyor belts outlast steel idlers better than 8 to 1

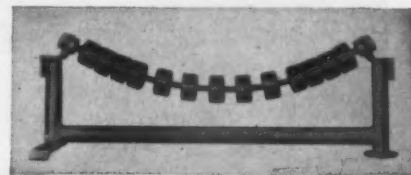


**NEOPRENE IDLERS** are still in service after two years. Accumulated sand previously fouled the steel idler bearings, stopped the idlers and damaged the belt. Average service was three months.

#### NEOPRENE resists abrasive action of sand, retains its flexibility

At one point in the production of castings at a magnesium foundry in the Midwest a conveyor belt carries molding sand from a chute up a 35° incline to another belt. Sand builds up under the belt. When the belt ran on steel idlers, sand fouled the bearings, jammed the idlers and damaged the belt. Average service life of the steel idlers was three months.

The manufacturer decided to install flexible idlers made of neoprene. The new idlers, developed by Joy Manufacturing Company, consist of neoprene discs permanently bonded to a flexible neoprene-sheathed steel cable and suspended from a single sealed bearing at each end. These end bearings are up out of the sand so spillage does not affect them. The discs supporting the belt, being flexible, conform to the shape of irregular loads, reducing loss of material through spillage. The idlers clean themselves because constant flexing forces the sand from



**NEW IDLERS** consist of resilient neoprene discs permanently bonded to a flexible neoprene-sheathed steel cable which is suspended from a single sealed bearing at each end.

between the rotating discs. Neoprene was the natural choice for this use because of its lasting resilience and resistance to the abrasive action of the sand. After two years—*more than eight times the service life of the steel idlers*—the neoprene idlers are still on the job.

Specifying neoprene in the rubber products you use can lower replacement and maintenance costs. Of all general-purpose elastomers, only neoprene possesses a *balanced combination of properties*. For more information on neoprene, mail the coupon below.



HYPALON is a registered trademark of  
E. I. du Pont de Nemours & Co. (Inc.)

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Please send further information and add my name to the mailing list for your free publications, the "Neoprene Notebook" and "Facts about HYPALON®," which show how the Du Pont elastomers are used to cut maintenance and replacement costs, improve production.

E. I. du Pont de Nemours & Co. (Inc.)  
Elastomers Division, Dept. PC-8  
Wilmington 98, Delaware

Name \_\_\_\_\_ Position \_\_\_\_\_

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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_





# ONLY AMERICAN AIRFREIGHT OFFERS P



**Airfreight costs less than you think.** A typical 100 lb. airfreight shipment costs only \$7.50 from New York to Chicago—\$18.80 from Chicago to San Francisco.



## COVERAGE

Only American offers you the extra speed of direct one-carrier service to all ten leading retail markets...more than two-thirds of the top thirty...all twenty-three leading industrial areas, in the United States.

## CAPACITY

American has space for your shipment where and when it's needed most. A combined daily lift potential of over a half million pounds gives American the greatest cargo capacity of any airline.

RS PURCHASING MEN ALL THESE BENEFITS



## FREQUENCY

Shipments get faster forwarding...spend less time in terminals with American's greater frequency of schedules. Over 1000 departures daily offer more service to more cities than any other air carrier.

## DEPENDABILITY

First with scheduled airfreight, American today has the largest, most experienced personnel force...most modern handling facilities. Is better able to solve shipping problems...provide dependable on-time deliveries.

# AMERICAN AIRLINES AIRFREIGHT

—carries more cargo than any other airline in the world

AUGUST, 1956

For More Information Circle No. 171 on Inquiry Card—Page 17

**ULBRICH**  
Stainless Steels

THIN GAUGE

The **BIGGEST** Little  
Converting Mill  
in the Country

EDGE ROLLING

Specialists in small  
orders—a foot or  
a pound and up

SLITTING

**STRIP** Flat Wire  
converted  
to your exact  
requirements

Complete Inventory—  
Delivery from Stock

**ULBRICH**  
Stainless Steels  
Established 1924  
WALLINGFORD • CONN.  
Wallingford Colony 9-7771

For More Information Circle No. 172  
on Inquiry Card—Page 17

f.o.b.

**filosofy of buying**



**P**URCHASING is a world wide industrial function. Guest of honor at a recent meeting of the Milwaukee P. A. Association was Dr. Ambrogio Puri, purchasing executive of Ilva, the iron and steel division of Finsider, S. P. A., at Genoa, Italy, one of the largest industrial combines in that country. Dr. Puri's visit was prompted by his reading of the textbook "Industrial Purchasing" compiled by Professors Westing and Fine of the University of Wisconsin, in collaboration with members of the Milwaukee Association. There is no similar organization in Italy, so when Dr. Puri came to America on a business trip, he made Milwaukee—and the Association—one of the key points in his itinerary, to chat with the authors in person and to see the Association at work. In the photo herewith, Dr. Puri (second from

left) is shown with Professor Fine and purchasing agent Carl Failmezger of Socony Mobil Oil Company and Kenneth R. Geist of Allis-Chalmers.

Dr. Puri (also a visitor at the editorial offices of PURCHASING) returned to his country as a fully accredited member of NAPA, qualifying through the New York Association by reason of his company's New York office.

**A**NOTHER visitor from overseas was Hironori Ono of Tokyo, Director of the Japan Management Association and lecturer at Keio University and the Junior College of Industrial Management. Mr. Ono is keenly interested in purchasing as a part of the over-all management field. He was here as assistant leader of a



study team or his countrymen observing office management practice in American industry.

**ELSEWHERE** on the international scene, Editor Stuart F. Heinritz of *PURCHASING Magazine* is scheduled to give the opening address at the annual meeting of the Purchasing Officers Association at Scarborough, England, in September, and will proceed to visit the associations in Sweden, France, Holland, and West Germany. Also, a conference is scheduled in New York the following month, at which representatives of NAPA, CAPA, and POA will discuss means and lay groundwork for closer cooperation at the international level.

**COMMODITY** classification serves many useful purposes—and some that are less admirable. The city charter at Central Falls, R.I., permits the School Committee to negotiate its own purchases of scientific apparatus, but all other requirements must be handled through the City Purchasing Board. When an order came through for a dozen new typewriters, classified as "scientific apparatus", the Board demurred. Requisition disallowed and returned.

**P. A. ANTHONY BRYANT** of Century Fence Company likes children. He spearheaded a drive by Waukesha (Wis.) businessmen to raise funds to purchase a baby elephant for the new Milwaukee County Children's Zoo. Since baby elephants have a habit of growing up into big ones unsuitable for petting and bottle feeding, little Jumbo will be traded in for another infant in a couple of years when its babyhood is over—and so on and on. Thus, officials of the Zoological Society point out, the Waukesha gift is in effect a perpetual one, assuring that Milwaukee small fry for years to come will always have a baby elephant for their wonder and delight.

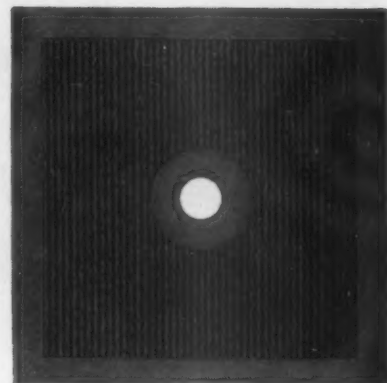
AUGUST, 1956

## Anti-Corrosive WIRE CLOTH

- STAINLESS STEEL
- "NICHROME"
- "MONEL"
- PHOSPHOR BRONZE

*for*

- FILTER CLOTH
- SPECIAL PARTS
- STRAINERS
- SIEVES
- TRAPS
- SCREENS



Are you using wire cloth or wire cloth parts which must be corrosion resistant? Are the service conditions in your plant really tough? If you have a problem selecting the proper anti-corrosive alloy, Newark Wire Cloth may have the answer.

Available in all corrosion resistant metals, Newark Wire Cloth is accurately woven in a wide range of meshes, ranging from very coarse to extremely fine.

If you have a wire cloth problem involving corrosion, please tell us about it . . . we may have the answer.

**NEWARK**  
*for* **ACCURACY**

A complete line of woven wire cloth and wire cloth parts in all malleable metals.

Send for Catalog #

**Newark**  
**Wire Cloth**  
**COMPANY**

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

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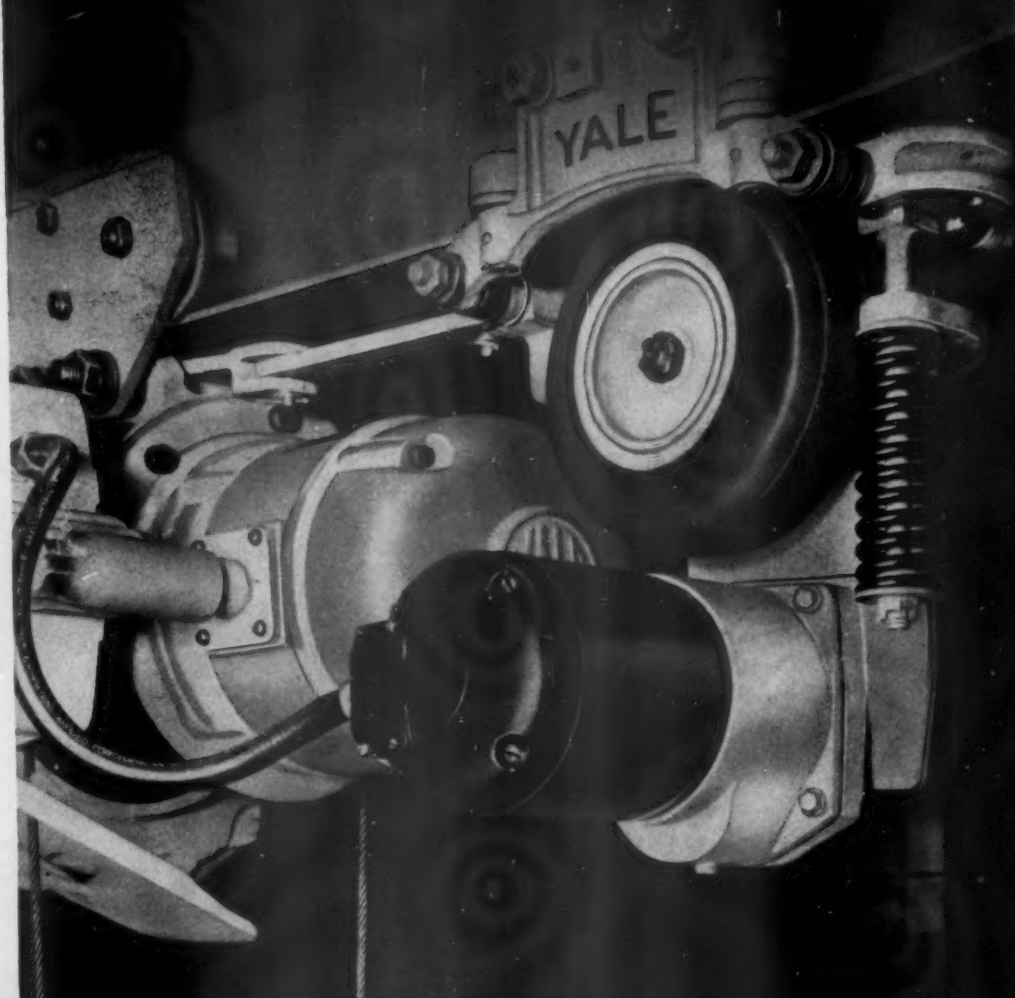
# 6

## NEW YALE TROLLEYS FOR

New Yale Rail King Speed Control assures adjustable acceleration and de-acceleration for each load condition.

### CHECK THESE FEATURES NOW:

- Permits inching and positioning a load with maximum safety.
- Gives adjustable acceleration to suit the load requirements.
- Gradual deceleration prevents abrupt stops and eliminates danger of swinging loads.
- Positive set brake assures no drift of load at rest.
- Brake is designed for low electrical maintenance.
- Operates by pushbutton control convenient to operator.



For maximum efficiency in your handling operation,  
**USE YALE HOISTS**



**Yale Cable King Electric Hoists**  
Capacities:  
¼ to 15 tons



**Yale Midget King Electric Hoists**  
Capacities:  
¼ to 2 tons



**Yale Load King Electric Hoists**  
Capacities:  
¼ to 1½ tons



**Yale Load King Hand Hoists**  
Capacities:  
½ to 2 tons



**Yale Spur-Gear Hand Chain Hoists**  
Capacities:  
¼ to 40 tons

The most complete line of hand and electric hoists

# MORE FLEXIBLE OVERHEAD HANDLING

## 1. NEW YALE RAIL KING MOTOR-DRIVEN TRACTOR TROLLEY

*Gives greater traction...pulls more with less power...climbs grades.*

The highly efficient and flexible Yale Rail King will pull any type of equipment on an overhead track—such as a string of loaded trolleys. Its drive system features a spring-loaded rubber-tired wheel that gives greater traction and nonslip operation on inclined tracks. Track wear is minimized because trolley is guided by hardened rollers bearing against sides of track flange. Capacities:  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 2 and 3 tons.

## NEW YALE PLAIN TYPE TROLLEYS: NEW YALE GEARED TYPE TROLLEYS:

**2. Model LP** has heavy drop-forged steel sides which extend beyond the wheel flanges to provide bumper protection for the wheels. Cast iron wheels with hardened ball tread have two lifetime-lubricated ball bearings sealed to keep all dust out.

**3. Model SP** has cast iron wheels with roller bearings lubricated by high pressure fittings mounted in the wheel-hub. Hardened ball tread minimizes wear on wheels and track.

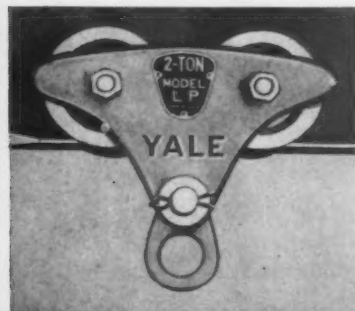
**4. Model W** is equipped with alloy steel hardened axles and pressed wheels with ball tread. Ball bearings are pressure-lubricated through end of axles.

All three models can be used on either sloped or flat flange I-beams and come in capacities of  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$  and 2 tons.

**5. Model LG** (similar in construction to Model LP) has two geared trolley wheels and driving pinion...gives positive lateral motion. Hand chain guide keeps chain aligned with hand wheel...prevents chain fouling. Curved flanges avoid grinding and cramping on small radius curves.

**6. Model SG** (similar in construction to Model SP) has trolley wheels lubricated by high pressure fittings, mounted in the wheel-hub. Fittings are easily accessible from outside of trolley. Gears engage with driving pinion...give positive lateral motion. Drop-forged steel clevis is suspended from steel equalizing pin.

Both geared type models have wheels designed to operate on either sloped or flat flange I-beams. Available in capacities of  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$  and 2 tons.



Each trolley in this completely new line of Yale plain, geared and motor-driven trolleys is designed and constructed for (1) greater ease of operation in low-headroom areas, (2) extra efficiency through reduction of frictional losses, (3) quicker and easier conversion to different types of overhead track systems. Thus, these new Yale Trolleys have a wider range of applications...give your hoists greater flexibility of use...speed up overhead materials handling.

For example, the new Yale Rail King Tractor Trolley (see opposite page) can work with any hand or electric hoist with a load capacity up to 3 tons, regardless of type of suspension...on conveyor lines, small crane bridges...on standard I-beams, splice plates or special rolled track systems. And Yale's new Plain and Geared Type Trolleys are equipped with an equalizing pin which connects the two trolley halves. This pin can easily be adjusted to permit use of the same trolley on different size beams...provides an equalized load and assures smooth action on small radius curves.

In addition to these new models Yale offers you a complete line of trolley units with capacities up to 40 tons. For further information about Yale Trolleys, send coupon today or call your Yale Hoist Distributor—he's listed in the yellow pages of your phone book under Hoists.

# YALE\*

## INDUSTRIAL LIFT TRUCKS AND HOISTS

\*REG. U. S. PAT. OFF.

Gas, Electric, Diesel & LP-Gas Industrial Trucks • Worksavers  
Warehouses • Hand Trucks • Hand & Electric Hoists

### MAIL THIS COUPON TODAY

The Yale & Towne Manufacturing Co., Dept. 258,  
Roosevelt Boulevard, Philadelphia 15, Pa.

☐ Please send details about new Yale Trolleys  
☐ Please send full information about Yale Hoists

Company \_\_\_\_\_

Name \_\_\_\_\_ Title \_\_\_\_\_

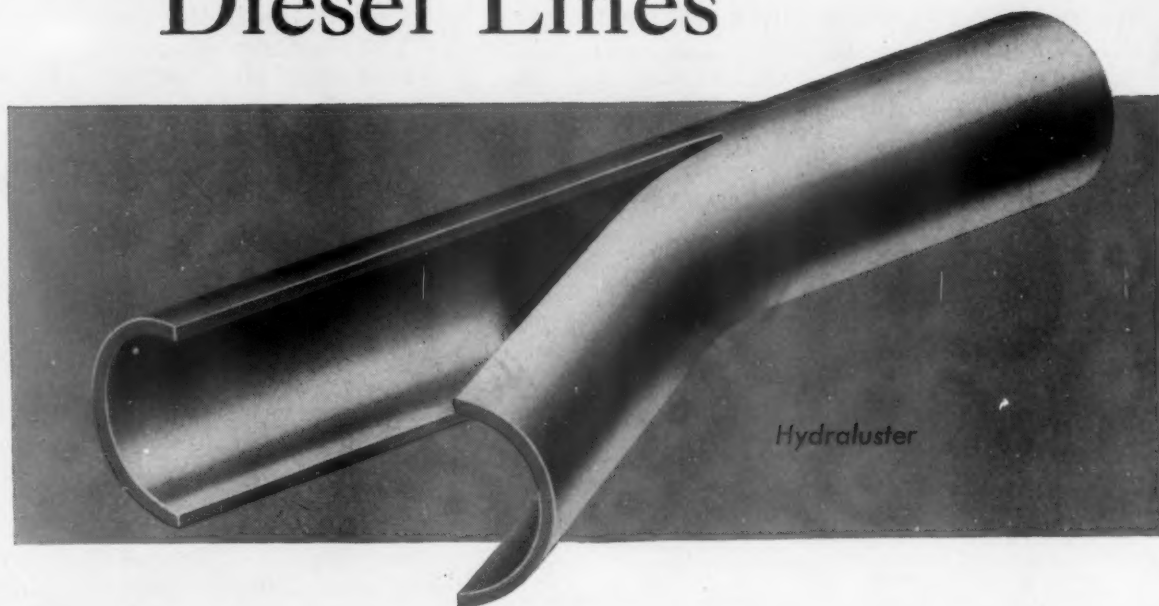
Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

In Canada write: The Yale & Towne Mfg. Company  
St. Catharines, Ontario, Canada



# A New Material for Hydraulic and Diesel Lines



**T. L. PARKER** Vice President  
Columbia Steel and Shafting Co.

Interior scaling and flow resistance—magnified by the introduction of the newer, high speed hydraulic fluids—point up a problem that is not entirely new to designers and engineers in the hydraulic and diesel fields. Oxidation and scale adhering to tubing walls can restrict flow in fluid systems, causing pressure changes and forcing the system to function at a substandard rate of efficiency. This same scale, loose and circulating, of course causes additional damage and premature deterioration of valves and pumps. The introduction of any other type of foreign matter or dirt, during or after manufacture, would have the same general effect.

A new tubing, now available in commercial quantities, is providing a logical solution to the problem. Marketed under the name of Summerill HYDRALUSTER, it has an exceptionally smooth, bright and *clean surface on both interior and exterior walls*. Produced by an annealing

process that regulates the cooling cycle as meticulously as the heating phase, Hydraluster is highly resistant to oxidation, and the smooth wall finish is not conducive to dirt adherence. Initially clean, the tubing is shipped fully protected by special preservatives, and it can be provided in individually capped lengths. The preservatives are easily removed with good grades of commercial solvent.

An interesting by-product of the silver-bright finish is the sales appeal it adds to OEM equipment. Hydraluster has the inherent strength and exceptionally fine working properties of steel, and is available at standard hydraulic tubing prices.

**SAMPLES and SPECIFICATIONS:** While supplies last, we'll gladly send you a sample of HYDRALUSTER. Your name, on company stationery, will bring specifications, descriptive literature and the sample by return mail.

*Summerill*

**Tubing Company Division-Columbia Steel & Shafting Co.**

PITTSBURGH 30, PA.

DEPT. NO. 1-13

District Offices: Buffalo • Chattanooga • Cleveland • Dayton • Hartford • Philadelphia • Pittsburgh • Milwaukee • Chicago

For more Information Circle No. 175 on Inquiry Card—Page 17

For More Information Circle No. 176 on Inquiry Card—Page 17→



## How long to shell 20 Billion peanuts?

**Y**OU'RE the manager of a peanut shelling plant and you're having a peck of trouble with the belt on the big drive that powers all your machines. Its continual stretching has caused so many shutdowns, it will be a miracle if you meet your production schedule for this year of 1935.

That's why you welcome the G.T.M.—Goodyear Technical Man—when he stops by. You tell him your troubles—and he tells you about Goodyear's time-proved COMPASS CORD Belt, sinewed with husky, stretch-resistant endless cords. It sounds good.

So you give him an order. During the next year—and the 14 that follow—the belt performs so smoothly, you

forget you have one. Finally, in 1950 your plant is closed down, but the drive and belt—after shelling over 20,000,000,000 peanuts in the 15 years—is moved and put to work in a nearby sawmill.

Just recently you heard the belt was still going strong. The G.T.M.? He's still your answer on belting or any industrial rubber problem and you consult him frequently through your Goodyear Distributor or Goodyear, Industrial Products Division, Akron 16, Ohio.

**It's smart to do business with your Goodyear Distributor.** He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."

Compass—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

# GOOD YEAR

THE GREATEST NAME IN RUBBER

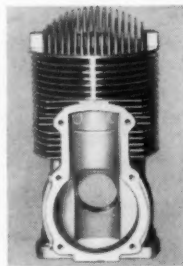
# DIE CASTING REPORT



**Streamlined—lightweight  
and rugged—thanks to advanced  
designing and use of die casting**

## 4 cylinder sizes from one die!

Interchangeable cores in a master die enable Precision to produce 4 different sized aluminum cylinder blocks for West Bend.



This year America's waters are being churned by a steadily growing outboard motor population. New companies entering this field have had to meet stiff competition from the "old line" producers. How have they done it?

The West Bend Aluminum Com-

pany, of West Bend, Wisconsin, is a good example. Their Hartford Division is currently putting on the market a line of high performance outboard motors ranging from 2 to 25 H.P. One of the most important factors in cutting down on excess bulk and weight has been the strategic use of aluminum die castings. Cooperative planning on die-cast design of components helped achieve compactness, streamlined appearance and light weight. All this without sacrificing strength where needed.

For production and assembly savings, it will pay you to investigate the use of die-castings. Let the Precision team of experienced die design engineers look at your problem. The result! Savings on machining, assembly and unit cost!

Write on your letterhead for free copy of "DIE CASTINGS...UNLIMITED" Precision Castings Co., 42 Warren St., Fayetteville, N. Y.

## Typical Aluminum Outboard Motor Parts

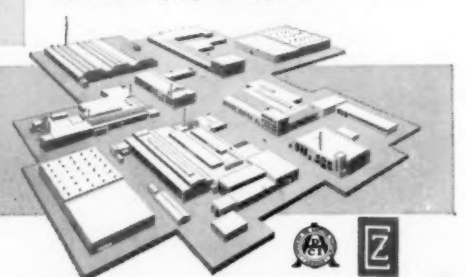
1. Transfer port cover
2. Gas pump cover
3. Cylinder head
4. Cylinder block
5. Steel bushing insert
6. Steering handle
7. Bearing cage
8. Slip clutch plate adapter
9. Swivel bracket
10. Drive shaft casing
11. Stern bracket
12. Stern bracket



## PRECISION CASTINGS CO.

A DIVISION OF **HARSCO Corporation**

FAYETTEVILLE, N. Y. — SYRACUSE, N. Y. — CORTLAND, N. Y. — NEW YORK, N. Y.  
CHICAGO, ILL. — CLEVELAND, OHIO — KALAMAZOO, MICH.





# *Specify*

## **ALLEN STAINLESS**

**... for bright, lustrous finish**

**... for high resistance to corrosion**

When designs call for bright finish and ability to stand up to corrosion, you'll find the largest range of sizes in Stainless Cap Screws available anywhere right at your Allen Distributor's. He stocks 97 standard sizes in Type 18-8 Stainless Steel, from #4 x  $\frac{1}{4}$ " to  $\frac{5}{8}$ " x 3" with NC threads; #10 x  $\frac{3}{8}$ " to  $\frac{3}{8}$ " x  $1\frac{1}{2}$ " with NF threads. Diameters of No. 8 and above have genuine unthreaded Allen Leader Points, to permit easier starting. Regularly furnished with Smooth Head unless Grip Head is specified.

# **ALLEN**

MANUFACTURING COMPANY

Hartford 2, Connecticut, U.S.A.



### **STAINLESS SET SCREWS**

with the deep-driving, tight-holding ALLENPOINT stocked by your Allen distributor in 54 standard sizes from #4 x  $\frac{1}{8}$ " to  $\frac{1}{2}$ " x 1" NC threads; #10 in lengths from  $\frac{3}{16}$ " to  $\frac{3}{4}$ " NF threads.

*Sold only through leading Industrial Distributors.*

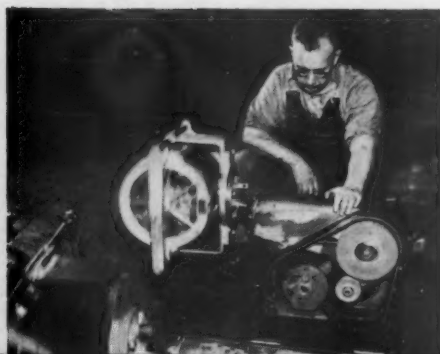
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AUGUST, 1956

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# 20 Case Histories of G-E Motor Benefits



**AMERICAN COOLAIR CORP.**  
"customers like 'no-reoiling' feature"



**RED DEVIL TOOLS**  
"stands up under severe vibration"



**CAMPBELL-HAUSFELD CO.**  
"makes product easier to sell"



**BUCKEYE INCUBATOR CO.**  
"customers say 'they're dependable'"



**TRUFLOW FAN COMPANY**  
"never had a motor failure"



**UTILITY APPLIANCE CORP.**  
"virtually trouble-free service"



**BERKELEY PUMP CO.**  
"lighter weight, modern appearance"



**GENERAL WIRE SPRING CO.**  
"more than adequate power reserve"



**W. M. CISSELL MFG. CO.**  
"easier to handle and install"



**PENBERTHY INJECTOR CO.**  
"allows maximum design flexibility"



**A. P. RUTH & CO., INC.**  
"speeds assembly, saves on shipping"



**PERMUTIT COMPANY**  
"saved \$8 per unit"

# —HOW MANY APPLY TO YOU?



**METALMASTER CORP.**  
"wide customer acceptance"



**MASTER-BILT REFRIG. MFG. CO.**  
"standardized 100% with G. E."



**AMERICAN DUPLEX CO.**  
"unexcelled durability"



**GOLD MEDAL PRODUCTS CO.**  
"saved 18% in shipping costs"



**C. M. SORENSEN CO., INC.**  
"reduced weight 15%"



**ALVEY CONVEYOR MFG. CO.**  
"all-angle mounting sold us"



**MOUNTAIN STATES EQUIP.**  
"cut weight nearly 10 lbs."



**TAIT MANUFACTURING CO.**  
"neater, more compact"



## "YEARS-AHEAD" MOTOR

### THESE G-E FHP MOTOR FEATURES ENABLE YOU TO IMPROVE YOUR PRODUCT, YET CUT COSTS

The twenty case histories at left are typical of the profit-building experiences of thousands of manufacturers using General Electric motors. The reason is simple—only G.E. gives you *all* of these outstanding features, combined into a complete line of smaller, lighter motors.

**1. SMALLER, LIGHTER DESIGN**—The trend to modern appearance and portability is reflected in this General Electric motor. It's 40% smaller, 50% lighter than old-style designs.

**2. MYLAR\* POLYESTER FILM INSULATION**—It has over 35 times more moisture resistance, 8 times more dielectric strength than ordinary paper insulation.

**3. ALL-ANGLE OPERATION**—General Electric's all-angle lubrication system gives you positive lubrication regardless of mounting position. As a result, you can often avoid the higher cost of "special" motors.

**4. EASY CONNECTION**—A speed nut welded inside the motor shell permits fast, easy connection of conduit fitting.

**5. MOUNTING VERSATILITY**—This G-E motor, whether resilient or solid-base, can be rotated inside its cradle to obtain complete mounting versatility. The cradle may also be removed entirely to meet your design needs.

**6. DOUBLE LUBRICATION LIFE**—The General Electric combination of a larger oil capacity (50% more than old style designs), and an efficient oil retention system means minimum motor maintenance for you.

Thousands of manufacturers have already used millions of these "Years-ahead" G-E motors. Why not evaluate your own motor savings in terms of these G-E motor benefits?

For more information, contact your nearby G-E Apparatus Sales Office, or write Section 702-29, General Electric Co., Schenectady, New York.

\* DuPont registered trademark.

† Feature of G-E summer cooling fan motors.

**GENERAL  ELECTRIC**



# APEX



# Magnetic Tools



"Like having an extra hand"—that's what operators say about Apex magnetic nut running and screwdriving tools. There's no time lost in awkward fumbling to start screws or nuts by hand. The powerful Alnico magnet in Apex fastening tools attracts and holds the screw or nut firmly in driving position, makes it easy to drive screws or run nuts at any angle—even

straight down—and in those hard-to-reach spots.

If you're not using Apex magnetic tools on your fastening operations—production or maintenance—better check right now to learn how you can make attractive savings in time and costs. Catalog 25 contains complete information; write, on your company letterhead please, for your copy.



MAGNETIC SOCKETS  
for Sheet Metal Screws



REPLACEABLE NOSE MAGNETIC  
BIT HOLDER



MAGNETIC SOCKETS  
Bolt Clearance Type



REVERSIBLE MAGNETIC SOCKETS



STRAIGHT NUT SETTERS



SERVICE DRIVE BIT HOLDER

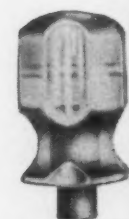


UNIVERSAL WRENCHES



EXTENSION UNIVERSAL  
WRENCHES

HAND DRIVERS  
Standard Lengths



HAND DRIVERS  
Stubby Type



*for the answer to your fastening problem!*

**THE APEX MACHINE & TOOL COMPANY**

1034 S. Patterson Blvd. • Dayton 2, Ohio

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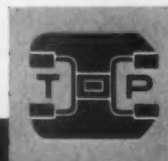


## This Team Picks "T-P" to Cut Tool Room Costs

Purchasing . . . Production . . . Inspection — each rely on Taft-Peirce Tool Room Specialties to do an important job for their company. Better construction, more attention to details like heat-treating mean much longer life, greater *true value*.

T-P precision craftsmanship in grinding, assembly, and inspection assures unfailing accuracy on every set-up . . . a better part, or final product. And basic construction is so sound that many of these products are reground after extensive use for even longer life-value.

**Remember, to get that  
extra cost-trimming value . . .**



### Specify these Taft-Peirce Tool Room Specialties

(Top row, left to right) Angle irons, large stocks of several styles and sizes; V-Blocks, cast iron and steel for milling, planing, grinding and inspection; Box Parallels, sides parallel to within .00025" in 6", square to within .0005" in 6". (middle row) Cast iron surface plate with universal square and cylindrical square; Duplex bench block; Sine angle plate; 5" and 10" Sine Blocks. (lower row) Taper test fixture; Granite surface plate with 5" Sine Bar; and Comparator-Square with Cylindrical Squares.

# TAKE IT TO TAFT-PEIRCE

THE TAFT-PEIRCE MANUFACTURING CO.  
WOONSOCKET, R. I.

**T-P Means  
TOP  
Precision**

**There's a  
story here**

**What does B&W's "Natural  
Source" mean to you?**



**T**HE "natural source" for Alloy Welding Fittings means that the same invaluable experience, knowledge and reputation which established B&W as the leader in the manufacture and application of alloy (B&W CROLOY) tubing and pipe, is now fully utilized in producing B&W CROLOY Welding Fittings.

And the "natural source" means that all the years of alloy research and development leading up to the unequalled acceptance of the B&W CROLOYS, now backs up every B&W CROLOY Welding Fitting.

B&W CROLOY Welding Fittings are available through B&W District Sales Offices and qualified welding fittings distributors. Order them by name ... CROLOY, and be sure.

**THE BABCOCK & WILCOX COMPANY**  
TUBULAR PRODUCTS DIVISION • FITTINGS DEPARTMENT  
3839 WEST BURNHAM STREET • MILWAUKEE 46, WISCONSIN

THE  
NATURAL  
SOURCE FOR  
ALLOY  
FITTINGS



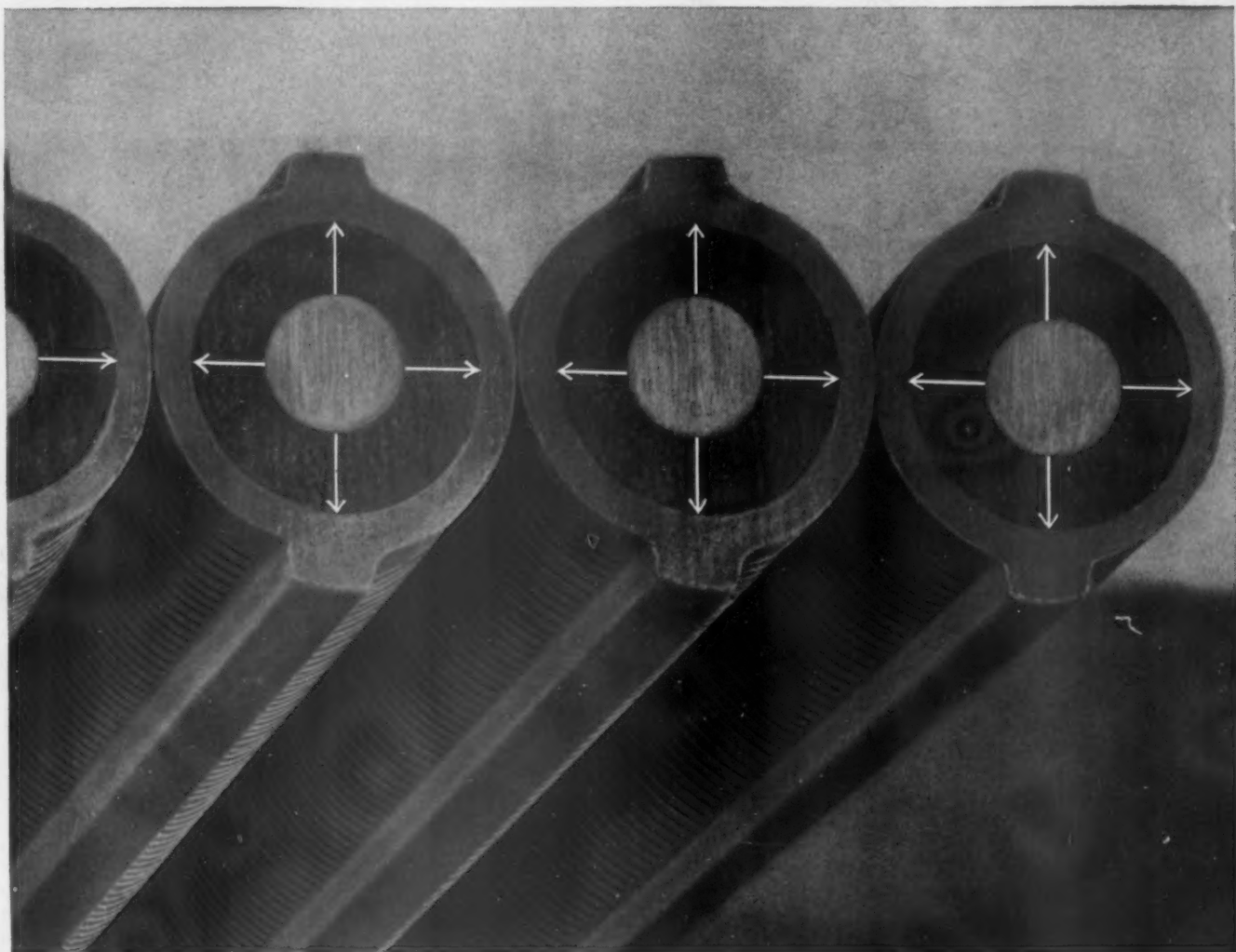
FA-6914

Seamless welding fittings and flanges, seamless and welded tubular products—in carbon, alloy and stainless steels  
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# EXIDE-IRONCLAD BATTERIES

For electric industrial truck operation



## Power tubes expand without shedding — preserve battery life

BATTERY FOR ELECTRIC INDUSTRIAL TRUCK. Exide-Ironclad Model TH. Write for Bulletin No. 5161.



Every time you discharge a storage battery, the active material on the positive plates expands. But the plate grids don't expand. This is basic.

On most batteries, the expanding active material tends to shear off from the nonexpanding grid every time the action takes place. But this can't happen in the Exide-Ironclad Battery. The reason is simple.

Active material is formed concentrically around the spinelike grid and held inside the plastic tubes. Expansion is predominantly in an outward direction—hence no shearing. Active material remains firmly locked to the underlying grid structure. And the flexible plastic tubes yield and take up as needed.

This extra protection against shedding of active material is only one of the many reasons for the long life of Exide-Ironclad Batteries. When you order heavy duty batteries, or the equipment requiring them, be sure to specify Exide-Ironclad. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

# Exide®

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AUGUST, 1956

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# Kimwipes

## wipe clean



## won't s

Kimwipes are made by the makers of Kleenex tissues

**cost less than cloth!**



**faster!**

**scratch!**

**You save money.** Kimwipes cost less than cloth to start with—and you eliminate laundry bills, time-wasting rag collecting and losses due to pilferage.

**You save workers' time.** Soft, absorbent Kimwipes are disposable. Workers use a clean, fresh wiper every time—a clean wipe is a fast wipe.

**You save production costs.** With Kimwipes there's no hold-over of grit or metal filings to scratch critical surfaces. You eliminate rejects.



**New Kimwipes Dispenser**

Holds the new, economical Dispenser Pack of 200 Kimwipes. Keeps work areas clear—puts wipers within time-saving reach. Ask your supplier or write to Kimberly-Clark, Dept. P-86, Neenah, Wisconsin.

**Kimberly-Clark Corporation**  **Neenah, Wisconsin**



*the gas truck  
that does  
more work  
because  
it spends  
more time  
on the job!*

**BAKER "FG"**



*here's why...*

Every step in the design of the new Baker "FG" gas fork truck was aimed at this end result: Maximum dependable and efficient performance, and longest life. The power plant, for example, is a heavy-duty gas engine designed expressly for rugged industrial truck service, power rated to truck capacity and geared to operate at optimum RPM. Compact rigid power train without troublesome universal joints...split clutch housing for better accessibility...single oil supply for entire assembly...full-floating, self-energizing, self-equalizing hydraulic brakes with one-point adjustment...these are a few of the features that mean *more time on the job*.

Our confidence in the "FG" is backed by a full 6-months' warranty—the only gas truck offering this protection. Capacities up to and including 6000 pounds. Write for specific bulletins.

**Baker**

handling equipment

**THE BAKER-RAULANG COMPANY**

1253 WEST 80th STREET • CLEVELAND 2, OHIO

A Subsidiary of Otis Elevator Company

6G-1

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PURCHASING

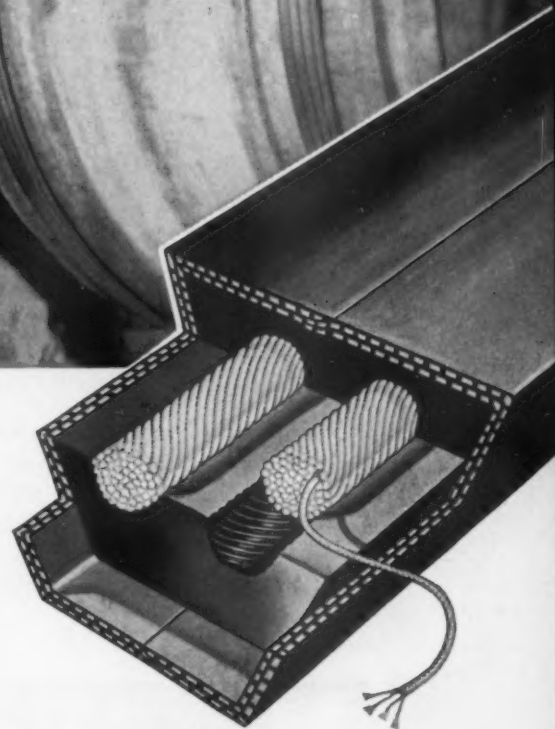
# PLENTY OF WEAR AND TEAR HERE!

Matched Thermoid Multi-V belts installed on 20 h.p. motor driven tanning drums in the Gellich Tanning Company, Taunton, Mass.

These 6 x 8 ft. tanning drums posed a tough drive problem. Wooden sheaves, small angle of driver contact and constant exposure to tanning agents resulted in severe service conditions. Wear and tear on V-belts was terrific . . . replacement frequent . . . until matched sets of Thermoid Multi-V belts were installed.

Now the average belt life is 6 years! Plant personnel report smooth, positive drum action. From every standpoint, service has been more than satisfactory, replacement costs lower and down time less.

For the extra tough drive problems in your plant, use Thermoid. Every Thermoid Multi-V Belt is *pre-stretched* to provide longer service and maximum power transmission without slippage. Thermoid C, D and E sections are rayon-grommited for greater strength and extra flexibility to with-

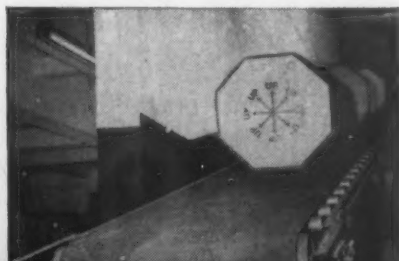


stand repeated shock loads. The entire belt is vulcanized into a solid unit that resists moisture, abrasion, internal friction and heat.

To meet the most exacting requirements of any plant service, your Thermoid Distributor carries a complete line of Thermoid Multi-V belts, hose and conveyor belting.

There's a Thermoid  
Conveyor Belt . . .

. . . and Thermoid Hose  
for every industrial need.



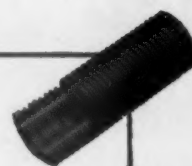
## Thermoid

THERMOID COMPANY, Trenton, N.J.

# LOOK



**TRUFIN TYPE S/T**  
for shell and tube heat exchanger and condenser applications.



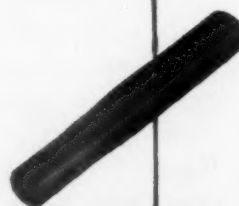
**TRUFIN TYPE H/A**  
integral copper or aluminum finned tube with controlled I.D. to facilitate brazed end connections.



**TRUFIN TYPE L/C**  
a bimetallic tube for air-cooled condensers or coolers.



**TRUFIN TYPE H/R**  
unexcelled for air or gas heat exchangers or condensers.



**TRUFIN TYPE W/H**  
for tankless water heater coils.



**TRUFIN TYPE I/L**  
an all aluminum tube with normal Trufin fins on the outside of the tube and longitudinal fins on the inside.

**SIX TYPES**

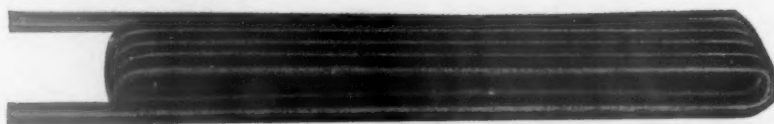
## ***FINS actually E-X-T-R-U-D-E-D from the Tube Wall!***

The fact that its fins are part of the tube wall is the secret of the construction of Wolverine Trufin\*. It's the secret too, of the amazing performance records which Trufin-tubed heat exchange units are hanging up every day.

Because the fins and tube are all one piece, you are assured of constant efficiency. Fins are not impaired by vibration, temperature change or varying pressure. Trufin transfers more BTU's per foot of tube—permits you to design more compact units—steps up the capacity of existing ones.

Trufin is fabricated as easily as plain tube, too. In fact, standard tools and techniques are used. Fabricated Trufin units are often stronger than units using plain tube because fins provide additional support at bends. You can obtain more information by writing for Wolverine's Trufin Application Book, "Opportunities Unlimited". Remember: You can depend on Trufin for dependable heat transfer! Wolverine Tube, 1427 Central Avenue, Detroit 9, Michigan.

\*REGISTERED U. S. PATENT OFFICE



## ***and actually FABRICATED as READILY as Plain Tube!***

DIVISIONS OF  
CALUMET & HECLA, INC.  
CALUMET DIVISION  
WOLVERINE TUBE DIVISION  
CANADA VULCANIZER  
& EQUIPMENT CO., LTD.  
FOREST INDUSTRIES DIVISION  
GOODMAN LUMBER CO.



**WOLVERINE TUBE**

Division of Calumet & Hecla, Inc.

Manufacturers of Quality-Controlled Tubing and Extruded Aluminum Shapes

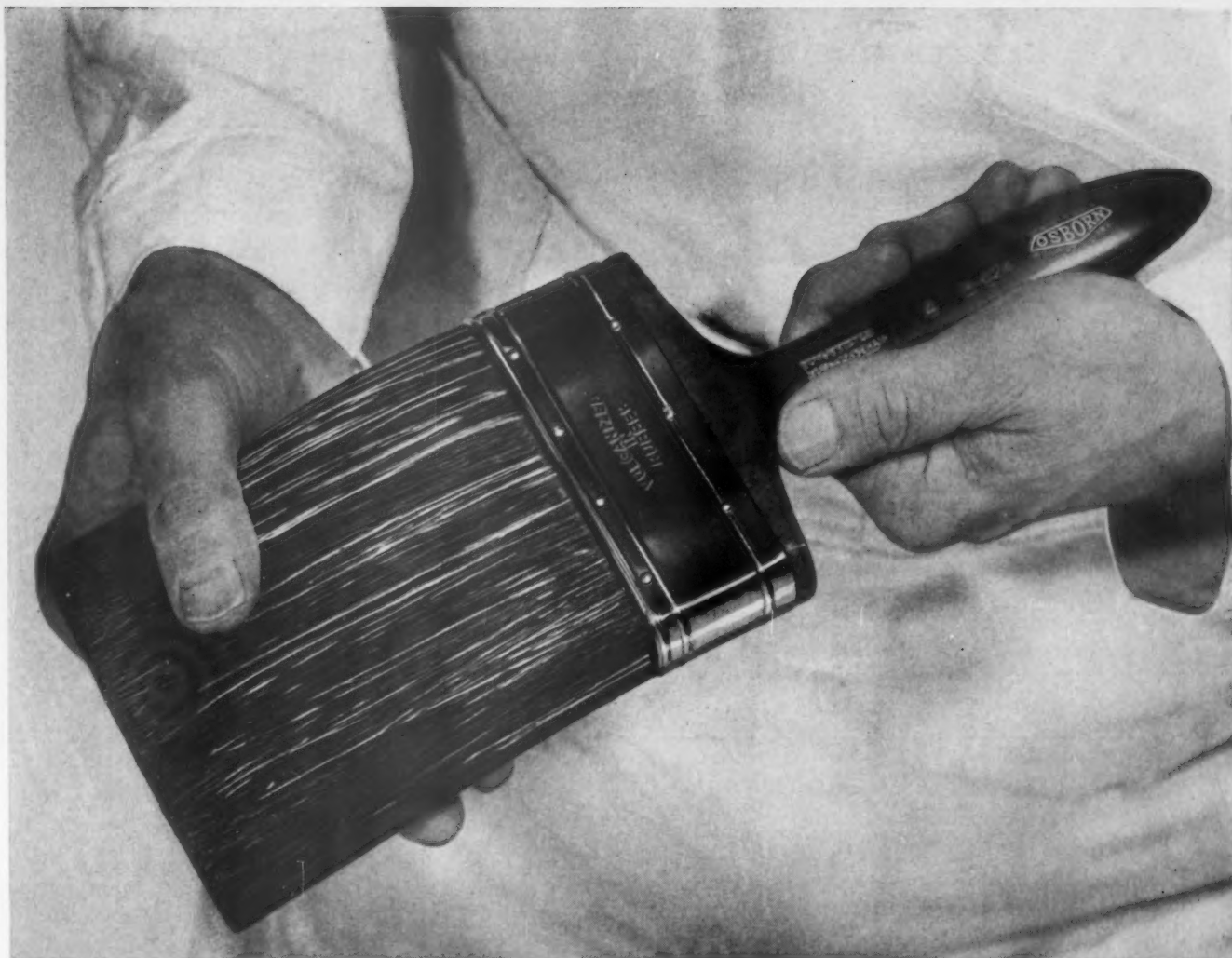
Wolverine Trufin is available in Canada through the Unifin Tube Co., London, Ontario.

5373

PLANTS IN DETROIT, MICHIGAN AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES

EXPORT DEPARTMENT, 13 EAST 40TH STREET, NEW YORK 16, NEW YORK.





## Specify "OSBORN" ...you know it's good

**Q**UALITY is no accident. It is the result of combining the best in design, materials and workmanship into a product.

For more than 63 years, Osborn has furnished Industry with the very finest brushing tools . . . a complete line of top-quality maintenance, paint and power brushes for every job.

Many of our customers have told us "We want to buy quality automatically—so we specify OSBORN". This can be your key to saving valuable purchasing time, and getting top value out of every dollar spent. For complete information, write today for Osborn Catalog 210-B. *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



**COMPLETE LINE SAVES TIME.** *There's no need to shop around for single items when you can buy all your paint, power and maintenance brushes from Osborn.*

# Osborn Brushes



BRUSHING METHODS • POWER, PAINT AND MAINTENANCE BRUSHES  
BRUSHING MACHINES • FOUNDRY MOLDING MACHINES

**Wagner****ELECTRIC MOTORS...the choice of leaders in industry**

## Wagner Protected Type Industrial Motors

**lower your maintenance costs—cut down-time**

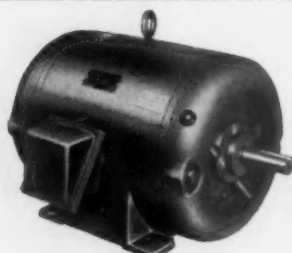
Wagner offers a complete line of protected type motors, specifically designed for use where severe conditions demand EXTRA protection—for bearings or windings... against corrosive vapors or abrasive dirt... in explosive atmospheres or exposed outdoor locations.

In their specific applications, each of these Wagner Motors assures completely dependable performance—with a minimum of maintenance and a maximum of freedom from costly down-time due to motor failure. Openings are provided for relubrication to greatly prolong bearing life.

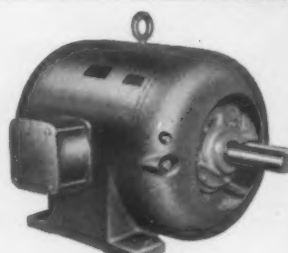
A Wagner engineer, expert on motor applications, will be glad to help you select the right motors for your specific needs. Just call the nearest of our 32 branch offices, or write for Wagner Industrial Motor Bulletins.



TYPE EP—Ribbed frame fan-cooled. New NEMA Frames. 1 to 30 hp.



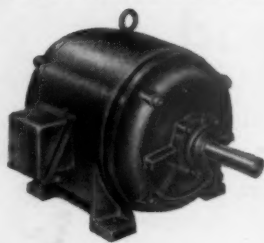
TYPE EP—Totally-enclosed fan-cooled. Corrosion-resistant frames. 40 to 250 hp.



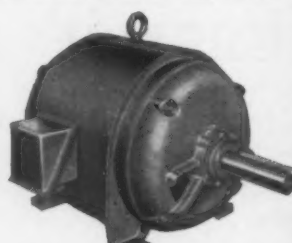
TYPE JP—Fan-cooled... Explosion-proof. Cast iron frames. 40 to 250 hp.



TYPE DP—Drip-proof... corrosion-resistant. New NEMA Frames. 1 to 30 hp.



TYPE DP—Drip-proof. Cast iron frames. 40 to 125 hp.



TYPE RP—Open-type drip-proof. Welded steel frames. 125 to 500 hp.

### WAGNER ELECTRIC CORPORATION

6360 Plymouth Ave., St. Louis 14, Mo., U. S. A.

**Wagner**  
Electric Corporation

EST. 1891

*BRANCHES IN 32 PRINCIPAL CITIES*



## WHEN YOUR PRODUCTION LINE'S IN TROUBLE Get "ELL" & "ESS" On the Double!

So heads are shearing off, threads are stripping and the fit's none too good.

Somebody pulled a "boner" . . . probably tempted by a cut-rate price.

Pretty expensive "saving" isn't it?

There's a lot more behind a fastener than the price tag it carries:

EXPERIENCE, QUALITY, "KNOW-HOW", REPUTATION AND ENGINEERING SERVICE.

But all is not lost. Get "Ell" & "Ess" on the line and this experienced pair will pull your irons out of the fire!

Lamson & Sessions ("Ell" & "Ess", to you) have been called in on many a "foul up" and haven't failed yet to put their knowing fingers on the cause.

So, if double trouble sets in, let "Ell" & "Ess" give you a hand. It's another extra and free service to you from Lamson & Sessions.

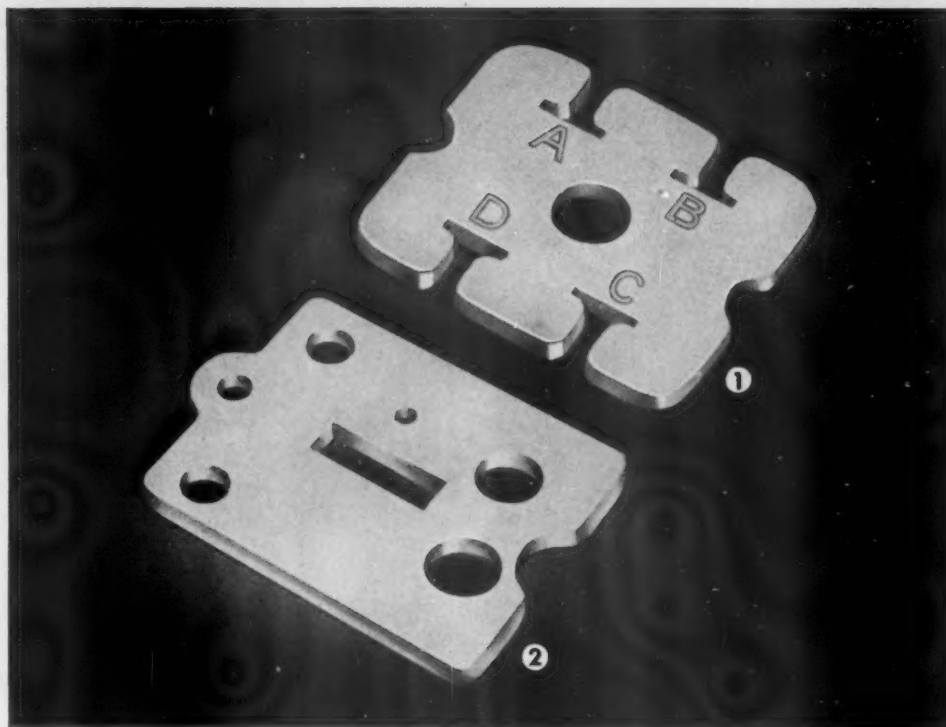


*The* **LAMSON & SESSIONS Co.**

1971 West 85th Street • Cleveland 2, Ohio  
PLANTS AT CLEVELAND AND KENT, OHIO • BIRMINGHAM • CHICAGO

For More Information Circle No. 190 on Inquiry Card—Page 17





1. Grade XP-240 for warm punching. 2. Grade XXP-241 for hot punching.

## Put these two new Taylor phenol laminates to work

HERE are two major additions to the extensive Taylor line of laminated plastics. There's a good chance that a product you're now designing can be improved through the use of these new materials . . . or that products now in your production line can be more economically made with them. Check the features of these outstanding paper base, phenolic laminates. They may be exactly what you're looking for.

**Grade XP-240** is a warm punching grade that requires some heat when punching more complicated shapes, though much less heat than comparable NEMA grades . . . and can be cold punched in thicknesses to  $\frac{1}{16}$ ". With this material, there's no lifting around punched holes, and check-in is negligible. It has excellent staking characteristics, and good dielectric strength. XP-240 has much to recommend it for such applica-

tions as insulating washers, terminal boards, plug and socket bases, switch bases, panels for sub-assemblies, and terminal strips.

**Grade XXP-241** is a hot punching grade with excellent physical and electrical characteristics, plus good moisture-resisting properties. It's dimensionally stable, punches without lifting around holes, and machines with clean-cut edges. XXP-241 can be used to advantage in such applications as condenser stator brackets, wave switch rotors and stators, plug and socket bases, terminal boards and sub panels, insulating washers. Both laminates are available in sheets approximately 49" x 49".

If you're interested in fitting these tough, versatile materials into your plans, Taylor engineers will help you work out design and production details. Call or write for the facts.

TAYLOR FIBRE CO. • Plants in Norristown, Pa. and La Verne, Calif.

### Taylor Fabricating Facilities

*Your production can be simplified . . . schedules safeguarded . . . inventory headaches cured . . . and over-all costs reduced by having Taylor fabricate finished parts to your specifications. Efficient, modern facilities are ready to serve you. Get in touch with Taylor about your specific requirements.*

**TAYLOR**  
Laminated Plastics  
Vulcanized Fibre



**Where the blur of the bite  
means a golden display**

PHOTOGRAPHED AT DETREX CORP., DETROIT, MICH.

The shower of sparks tells you right away this wheel cuts faster! But that's only *one* feature of the revolutionary new B7 Bond Resinoid Cut-Off Wheel developed by CARBORUNDUM. *Want a faster cut, free from burr and burn?* B7, tested against ordinary wheels, gives it to you...with equal

wheel life. *Want up to 25% longer wheel life?* B7 gives it to you...with equal quality of finish. No wonder B7 Bond Wheels are setting new standards of performance for abrasive cut-off... in production, close tolerance accuracy, economy! Have your CARBORUNDUM Distributor or

salesman put a B7 blade on your chopper type machine, and see for yourself! For Bulletin A-1374 on B7 Bond Wheels, write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ontario.

Through application "know-how" and product quality

# CARBORUNDUM

REGISTERED TRADE MARK

continually puts more **sense** in your abrasive **dollar**



## Number one on your disc parade

PHOTOGRAPHED AT DETREX CORP., DETROIT, MICH.

The hardest-working sander disc you can use is the new Resin Sander Disc by CARBORUNDUM. It cuts fast, free and cool, with maximum stock removal at all times. The resin bond is engineered with greater holding power, and a tough new fiber is used in the backing. As a result, Resin Sander Discs

resist both edge-wear and the heat of flat contact grinding. You get more work out of each disc—which soon adds up to impressive savings. Another feature: special moisture-resistant packaging means Resin Sander Discs reach you "factory-fresh"—are easier to store and handle. There's a complete range of

sizes and types to fit all Disc Sanders, in 16 through 150 grit. For a convincing demonstration, call your CARBORUNDUM Distributor or salesman. Or write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ontario.

Through application "know-how" and product quality

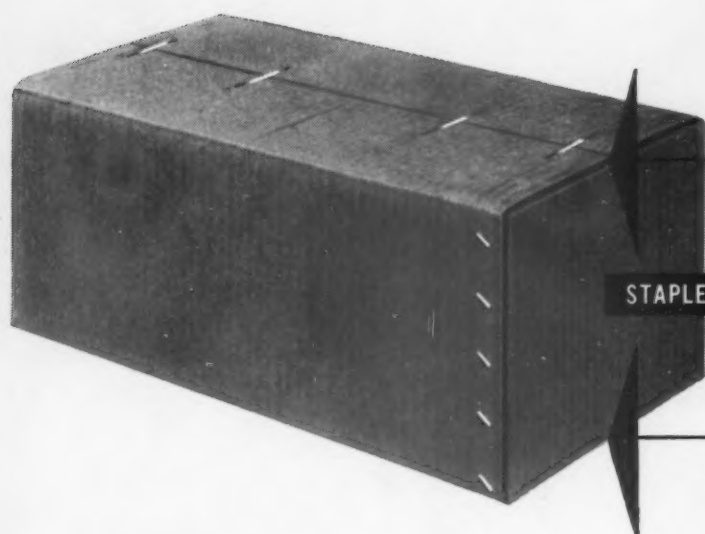
# CARBORUNDUM

REGISTERED TRADE MARK

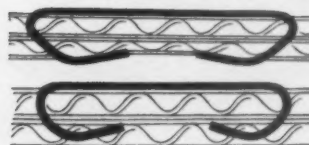
continually puts more **sense** in your abrasive **dollar**



# New BOSTITCH BOXLOK seals your containers faster, more securely

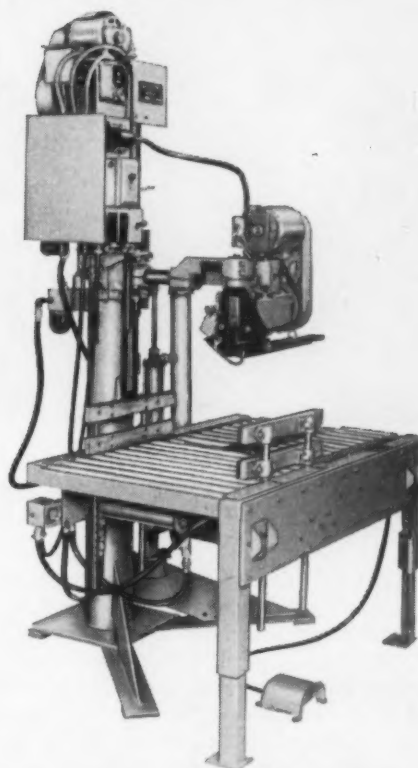


STAPLE CLINCHES



STAPLES TOPS AND BOTTOMS IN ONE PASS

- Tightly seals top and bottom flaps of regular slotted and overlapped containers . . . with wide-crown staples of .090 x .040 wire . . . requiring fewer staples per box . . . driven and clinched from the outside.
- Tops and bottoms stapled simultaneously—or tops only, if desired—at rate of over 100 stapling strokes per minute. Swivel heads permit quick change from diagonal stapling on overlapped flaps to right-angle stapling across flaps that meet. Separate ½-h.p. motor for each head.
- Cartons automatically centered to line up staples. Adjustable split centering device releases carton to permit free movement after each staple is driven.
- Staples automatically driven when the head lowers and contacts the carton.
- Cartons of varying widths, heights and lengths can be stapled without adjustment.
- Wearing parts easily accessible for quick replacement. Little service required.
- Meets requirement of parcel post, freight, overseas shipments.



**BOSTITCH BOXLOK TOP AND BOTTOM STAPLER**  
Model D12BT for use in conveyor lines. Other models for smaller production requirements.

For specifications and other information, send coupon below

**Fasten it better and faster with**

**BOSTITCH**<sup>®</sup>  
STAPLERS AND STAPLES

BOSTITCH, Inc., 728 Mechanic St., Westerly, R.I.  
Please send descriptive folder on new Bostitch Boxlok.

Name

Business

Address

City  State



## Protection starts on the outside of this container!

A new protective idea developed by O. C. Doe & Sons of Massachusetts is getting their Hawbuck Orchards apples through to the consumer unbruised.

It's a gaily printed, brightly illustrated message on their Gair container, directed to jobbers, supermarkets and consumers. Here are some samples: "Handle me right and your customers I'll delight." "Contents—apples crisp and sweet, with proper care they're quite a treat." Or—"Apples inside—the pick of the crop, handle carefully—please don't drop."

What's more, these eye-catching jingles are work-

ing—partly because Gair's printing job on the container helps put them over. Reaction of jobbers, store managers and commission houses is enthusiastic. And the flood of appreciative mail from consumers leaves no doubt that Hawbuck Orchards apples are coming through undamaged.

Maybe there's an idea here to help your container do a better job. Or maybe some other item in Gair's experience might be the answer to your shipping problem. To find out give us a call. We'll be glad to have a man stop by at your convenience.

### YOU'RE LIVING NEXT DOOR TO THE EXPERT

**GAIR CONTAINER PLANTS:** Atlanta, Ga. • Cambridge, Mass. • Cleveland, Ohio • Holyoke, Mass. • Jackson, Miss. • Los Angeles, Cal. • Martinsville, Va. • New Orleans, La. • No. Tonawanda, N. Y. • Philadelphia, Pa. • Plymouth, Mich. • Portland, Conn. • Richmond, Va. • Syracuse, N. Y. • Teterboro, N. J.



# GAIR

SHIPPING CONTAINERS • FOLDING CARTONS

PAPERBOARD • KRAFT BAGS AND WRAPPINGS

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Ask your **LYON** Dealer for

# STEEL EQUIPMENT

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STEEL KITCHENS for THE HOME

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- Flat Drawer Files
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**LYON METAL PRODUCTS, INC.**  
General Office: 833 Monroe Ave., Aurora, Ill.  
Factories in Aurora, Ill. and York, Pa.  
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Lyon also has  
complete facilities for  
manufacturing special items  
to your specifications



**Your**  
*Best* **Choice!**

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**HUSSEY**  
**B R A S S**

Sheet  
Wire  
Coils  
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Products

• Manufactured by a company with over 100 years experience in producing copper and brass products of quality.

• Produced in the form your job requires and easily fabricated to your design.

• Readily available from seven conveniently located warehouses . . . or in mill-runs and with mill services such as shearing, slitting or special heat treatment.

**C. G. HUSSEY & COMPANY**  
(Division of Copper Range Co.)

**ROLLING MILLS AND GENERAL OFFICES**  
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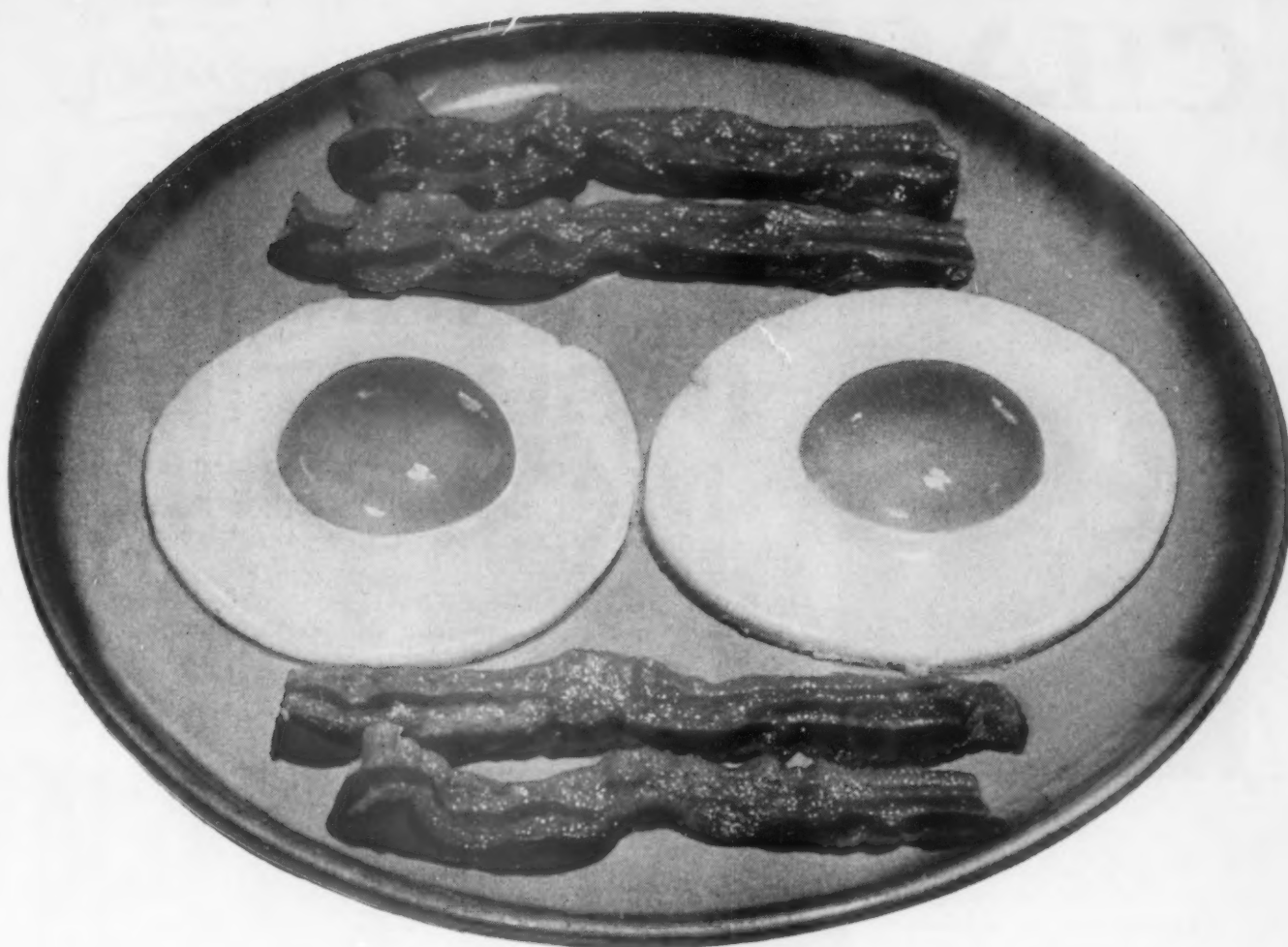
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***Laminated plastics ... for a combination of properties that can't be beat***

**SYNTHANE** is a favorite material among engineers, designers, and product-conscious executives because it possesses a combination of many properties. It is light in weight, strong; has high dimensional stability, excellent electrical properties and chemical resistance. It's also easy to fabricate.



**Synthane makes excellent ball bearing retainers.** High dimensional stability, wear resistance and non-galling properties keep bearings humming smoothly at 100,000 rpm and up! Synthane's light weight minimizes the effect of any eccentricities, provides lower starting torques, less bearing weight. The Synthane plant has facilities for producing practically every type of laminated plastic retainer known.



**Property combinations!** Synthane has them ... in over 30 individual grades ... sheets, rods, tubes, moldings and completely fabricated parts. Send for free illustrated catalog today.



**EASILY MACHINED**



**DIELECTRIC STRENGTH**



**TENSILE STRENGTH**



**CHEMICAL RESISTANCE**

**SYNTHANE**  
**S**

**SYNTHANE CORPORATION, 7 RIVER ROAD, OAKS, PA.**

# CHASE *the name to remember*

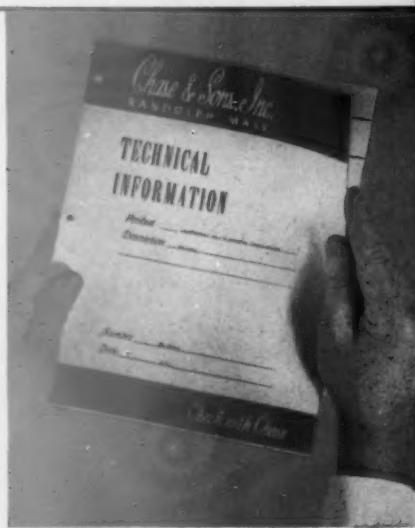
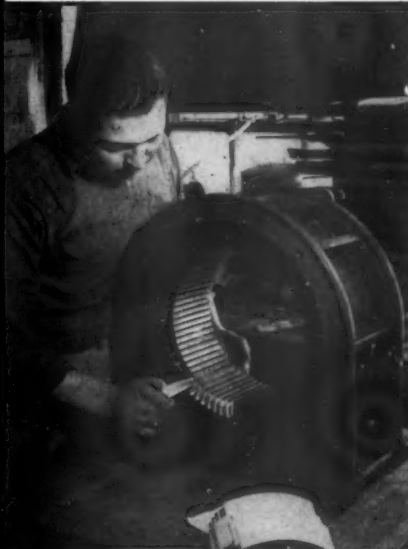
*for*

## LAMINATED INSULATION MATERIALS



◀ Typical of the many Chase products designed for the electrical industry is this generator application where rag paper or kraft paper is combined with DuPont Mylar ® to suit your particular insulation requirements. Chase Slot Insulation comes in sheets, rolls or cuffed.

Complete technical data on Glasterra, or Chasbestos (a combination of asbestos sheet and polyester film) will be sent you upon request. Specifications and samples of all Chase products are available . . . and Chase engineers will gladly help you solve your electrical insulation problems. Chase & Sons, Inc., Randolph, Massachusetts. ▼



▲ Another application where Chase laminated insulation material is used is shown above where double thickness slot insulation is being used in a 15 HP A.C. induction motor. All Chase products are manufactured to meet the highest specifications . . . of the best materials available.

▲ Diversification of Chase product line is further indicated by this illustration showing a development engineer at Kennecott Wire & Cable Co. examining magnet wire insulated with Chase Glasterra Tape. Glasterra is a combination of asbestos sheet, glass yarn or fabric and silicone varnish.

# CHASE

ELECTRICAL INSULATING TAPES AND MATERIALS

For More Information Circle No. 198 on Inquiry Card—Page 17

For More Information Circle No. 199 on Inquiry Card—Page 17 →



# STANOIL Industrial Oil delivers on tough assignment at Indianapolis Screw Products Corp.

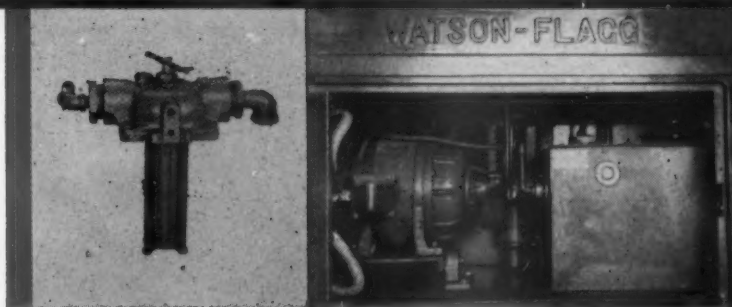


Mr. R. W. Williams, Plant Superintendent checks pitch diameter of thread with Glenn Riggs, Standard lubrication specialist. Glenn Riggs is an old hand at helping industrial firms work out lubrication problems. Glenn has been doing this sort of thing for 28 of the 30 years he's been with Standard. This background and experience, customers have found, pay off for them.

Rolling threads on aluminum bronze with pitch diameter tolerances as close as .0014" is a tough job but Indianapolis Screw Products Corporation is used to taking on such jobs and delivering. They give tough jobs to the hydraulic oil they use, too, and they expect it to deliver. They've given such a job to STANOIL and they're getting the results they expect—and more.

STANOIL Industrial Oil is used in the hydraulic system of a Watson-Flagg precision thread roller in the Indianapolis Screw Products Corporation plant. The system uses a Vickers pump and Cuno filter. The filter has not been cleaned in over a year *because it hasn't needed cleaning*. Here, as in other applications, STANOIL delivers top performance with minimum maintenance and maximum system cleanliness of the hydraulic system.

STANOIL likes tough assignments like this one; likes them because it can deliver with plenty to spare. Perhaps you would like to know about the use of STANOIL in a hydraulic application in your plant. In the Midwest and Rocky Mountain states, a lubrication specialist at your nearby Standard Oil office will be happy to discuss it with you. Call him. Or contact Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



Cuno filter (left) remains clean after more than year filtering STANOIL. Vickers pump on Watson-Flagg Thread Roll machine (right). Good housekeeping and STANOIL team to give top performance in this hydraulic system.



**STANDARD OIL COMPANY**  
(Indiana)



***Size is relative . . .***

**but these stainless steel heads  
are big and heavy gauge in  
anyone's eyes.**

**They are typical, too,  
of the unusual in  
Carlson service.**

**When you want stainless  
steel plates,  
plate products, forgings, bars,  
and sheets (No. 1 Finish)**

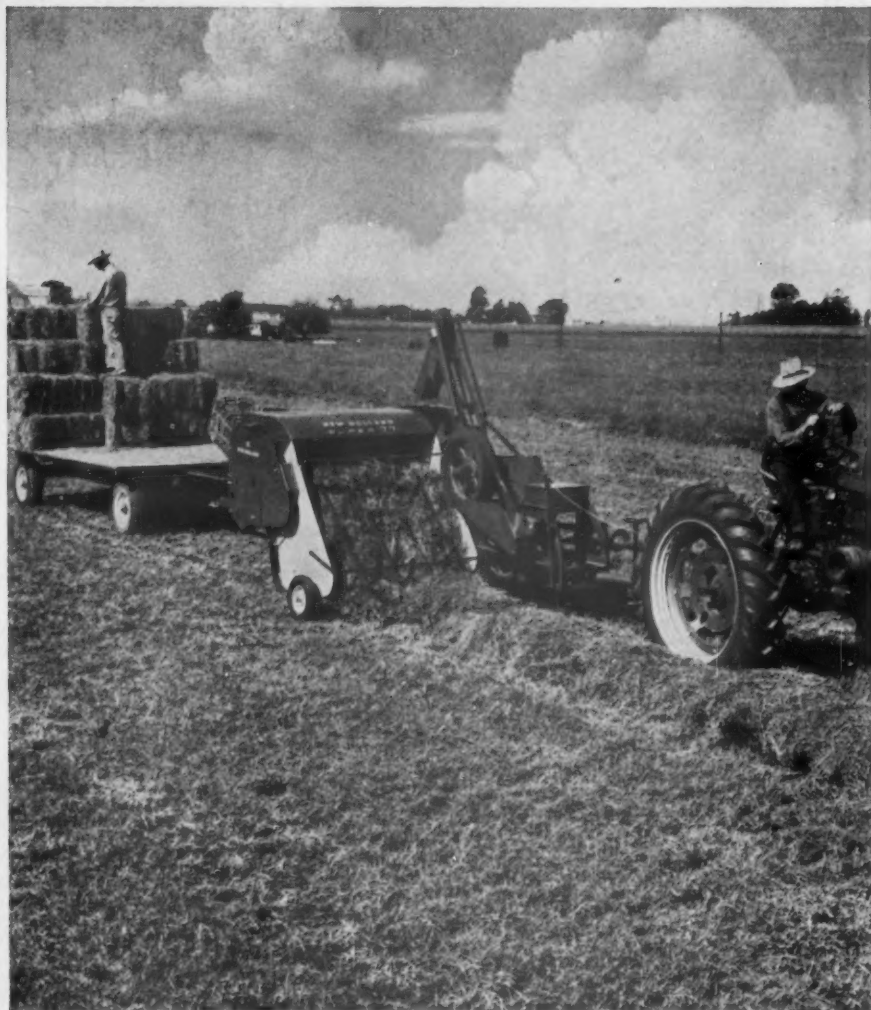
**come to your headquarters  
for service**

*G.C.* **Stainless Steels Exclusively**  
**CARLSON, INC.**

**THORNDALE, PENNSYLVANIA**  
*District Sales Offices in Principal Cities*

These four semi-elliptical  
heads are made of Type  
304 stainless steel. Out-  
side diameter: 74 $\frac{3}{4}$ ".  
Gauge: 2.58" minimum.  
Weight: Each head  
weighs over 3 tons.

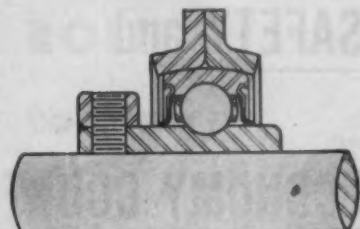
## MORE FACTS on why more and more leading manufacturers choose Link-Belt bearings



THIS NEW HOLLAND HAY BALER is typical of equipment on which JPS-200 ball bearing pillow blocks are popularly applied.



**SELF-ALIGNING.** Free-rolling and full load capacity of the JPS-200 ball bearing pillow block are maintained even with shaft deflection or misalignment.



**MAXIMUM SEALING EFFICIENCY.** Synthetic rubber lip-type seal, integral with bearing, keeps lubricant in, dirt out. Greased at factory ready for operation.



**SINGLE-ROW, DEEP-GROOVE** standard Series 200 ball bearing is used. Extra-long inner ring assures proper load distribution—heavy spring locking collar firmly secures bearing on shaft.

# ✓ Low cost ✓ Compactness ✓ Self-alignment

## Link-Belt JPS-200 ball bearings combine all three

**H**ERE is a new concept in bearing design—a proven answer to the economy needs of many equipment manufacturers. And most important—this JPS-200 Series ball bearing pillow block achieves low cost without sacrifices in bearing design.

The standard, full-capacity, self-aligning Series 200 ball bearing is supported in a rugged, pressed steel housing. Further economies result because the JPS-200 arrives in *one piece*—ready for fast, foolproof installation. And standard dimensions

plus extreme compactness are added aids to the designer.

Ask any one of 40 Link-Belt offices or an authorized stock-carrying distributor for Folder 2517 containing complete information on the JPS Series. And get Book 2550 for data on Link-Belt's complete ball and roller bearing line.

**LINK-BELT**  
Ball and Roller Bearings



Rugged, steel-clad JPS-200 Series — from industry's most complete line of ball and roller bearing pillow blocks.

**LINK-BELT COMPANY:** Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



**WHERE CLEANLINESS**

**SAFETY and**

**ECONOMY COUNT...**



Hospital corridors must be easy to clean and safe from fire. The answer here is wainscoting of K&M Apac.

## K&M "APAC" ASBESTOS SHEETS

These two illustrations show but one of many excellent uses for this material... use K&M Apac almost anywhere... as interior and exterior siding, office paneling, plant and office ceilings, machine shop sheathing, stock room sidewalls, basement partitions, linings for elevator casings; as inside-plant enclosures, as waste and storage bins, and even as hoppers.

K&M Apac is the ideal low-cost, long-life building material. It is made of two practically indestructible ingredients... asbestos fiber and portland cement... and actually grows harder and more durable with age. K&M Apac cannot burn, rot or corrode, nor can it be damaged by vermin or rodents. Apac is easily sanitized with soap and water.

PRACTICALLY NO MAINTENANCE NEEDED, indoors or out! K&M Apac sheets are highly weather-resistant. Their natural gray color is attractive and no painting is required for protection.

INEXPENSIVE APPLICATION is possible with K&M Apac... large 4' x 8' sheets can be applied on a big area quickly, and even unskilled labor can cut, drill or shape them on the job without special equipment.



K&M Apac is ideal for this ramp-wall which must be rugged to withstand the continuous scuffing and scraping of heavy traffic.

**KEASBEY & MATTISON**  
COMPANY • AMBLER • PENNSYLVANIA

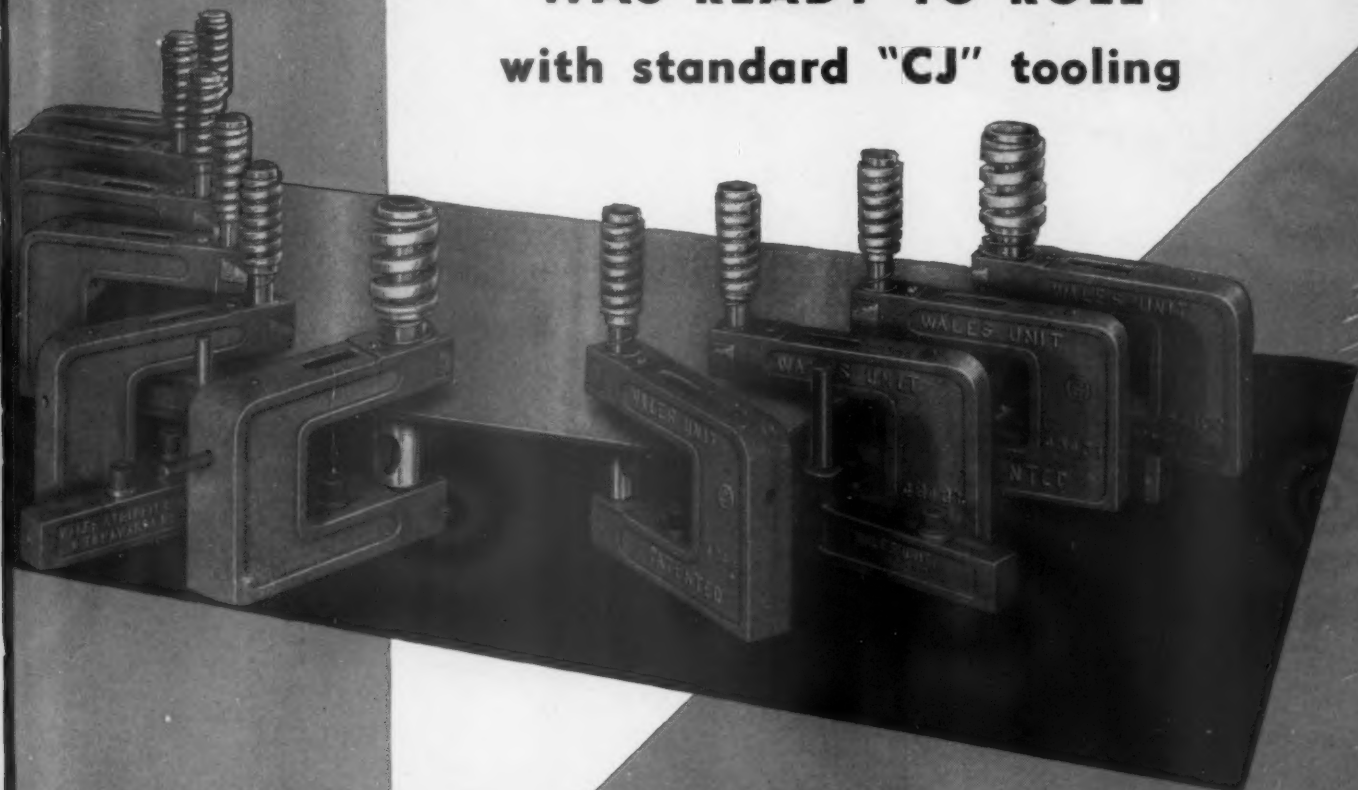


**6 minutes . . . 45 seconds**

**and this ten hole**

# **WALES PUNCH SET-UP**

**WAS READY TO ROLL  
with standard "CJ" tooling**



**HERE'S THE RESULT  
EVERY 12 SECONDS**

. . . and any good mechanic can make a similar set-up in a matter of minutes. WALES standardized punching units are completely self-contained . . . punches and dies are permanently aligned . . . nothing attached to press ram. They will always save hours . . . and often DAYS in set-up time.

Rugged type CJ units will punch holes up to 1 1/4" diameter in material up to 3/4" thick . . . unlimited straight line, scattered and staggered, round or shaped hole punching patterns. Die retention design features rapid die change **WITHOUT REMOVING DIE** from set-up . . . provides controlled slug ejection.

No "dead storage" the WALES WAY! The same group of units can be used *over and over* again in other patterns.

Get this time-saving, money-saving story. Write for fully illustrated, fact filled catalog. **NOW!**



Send for BULLETIN NO. 19G

Illustrated with actual job work and full of interesting data and suggestions that you can adopt for your shop.

**WALES *Strippit* CORPORATION**

**"...the Wales-Way is the PLUS-PROFIT way"**

**345 PAYNE AVE. — North Tonawanda, N.Y.**

WALES-STRIPPIT OF CANADA LTD., HAMILTON, ONT.

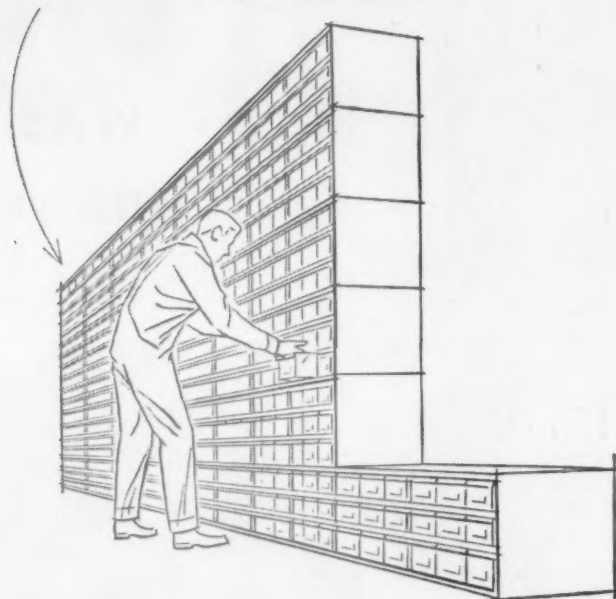
# HOW TO USE HALLOWELL STORAGE WALLS IN MAKING ECONOMICAL STORAGE SPACE



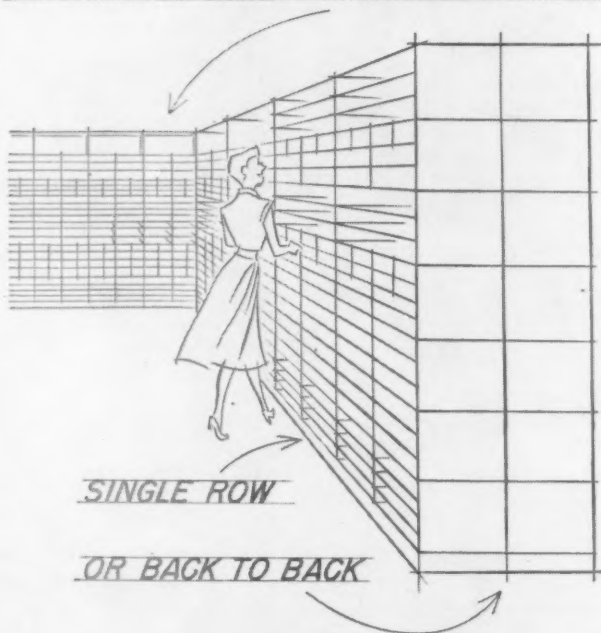
STACK THEM AGAINST WALLS

-AS HIGH AS YOU WANT

-AS LONG AS YOU WANT



USE THEM TO BUILD PARTITIONS OR WALLS



SINGLE ROW

OR BACK TO BACK



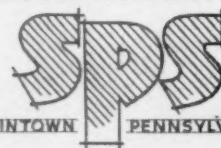
SET THEM UP ADJACENT TO MACHINES AND OTHER  
WORK AREAS TO STORE BOOKS, TOOLS, PARTS, ETC.



Prime Cold Rolled Steel • All Welded and Finished  
with Baked on Enamel • Interchangeable Drawers •  
3 Different Size Drawers Can Be Intermingled in the  
Same Case • Stocked by Leading Shop Equipment Dealers •  
Send for Bulletin 2093 • Hollowell Shop Equipment  
Division, Standard Pressed Steel Co., Jenkintown 31, Pa.

**HALLOWELL** SHOP EQUIPMENT DIVISION

STANDARD PRESSED STEEL CO.



JENKINTOWN

PENNSYLVANIA

**BENCHES (CABINET, WORK, UNIT) • STOOLS AND CHAIRS • SHOP DESKS • TOOL  
STANDS AND CABINETS • DRAWERS, DRAWER TIERS • STEEL CARTS • SHELVING**

For More Information Circle No. 204 on Inquiry Card—Page 17





*Pour savings into your shop with*

# **GULFCUT**

*cutting oils*

Gulfcut is the new brand name for Gulf's complete line of modern, up-to-date cutting fluids. Each Gulfcut oil is scientifically compounded to meet the most exacting requirements for tool life, accuracy of work, and surface finish.

This new line of Gulfcut oils includes mineral-lard oils, sulfurized-mineral oils, sulfurized-mineral lard oils, sulfochlorinated-lard oils, and emulsifying oils—outstanding cutting oils that contribute to better results in every metal cutting operation.

Have a Gulf Sales Engineer show you how one or more of the Gulfcut line of cutting oils can help you get increased tool life and lower machining costs in your shop. Consult the telephone directory for the number of your local Gulf office.

Gulf Oil Corporation • Gulf Refining Company  
1822 Gulf Building, Pittsburgh 30, Pa.



**THE FINEST PETROLEUM PRODUCTS  
FOR ALL YOUR NEEDS**



## THE BOX THAT SAYS "BUY ME"



*Just when the customer is in a buying mood, the product container is often the only salesman. Does your box close the sale by saying "Buy me"? An attractive, informative Gaylord box catches the prospect's eye...gives him convincing reasons why he should invest his money in your product.*

*Employ handsome Gaylord containers as your full-time salesmen—contact your nearby Gaylord office.*

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

**GAYLORD CONTAINER CORPORATION • ST. LOUIS**

DIVISION OF CROWN ZELLERBACH CORPORATION

# Professional Purchasing

**A**MONG the stimulating conversations at the recent Cleveland meeting of N.A.P.A. was one concerning the professional status of purchasing—now and in the future.

The whole trend of purchasing progress has been toward a more professional approach and toward professional standards of competence in handling an increasingly complex function. Tremendous strides have been made in this direction. Purchasing has become professional, but it is not a profession. And when the subject is presented as a goal for concerted effort and for formal recognition, it remains a controversial one, even within the purchasing group.

Let's clarify the goal. It would be impractical to aim for industry acceptance of purchasing as a professional, in the sense of requiring licensed practitioners, such as the public interest demands in the case of medicine, law, engineering, and the clergy. It would be contrary to the basic freedoms of our enterprise system. It just wouldn't "stick", so far as management is concerned. Perhaps it shouldn't.

And there are individuals in purchasing who resist the idea in the belief that the destiny of purchasing should be allied with the general field of management, rather than setting it apart. They shy away from putting initials after their names, that might tend to pigeonhole them in a particular assignment in an industrial economy where the avenues of opportunity and advancement are, as they should be, unlimited in scope and direction.

But neither of these valid objections precludes the possibility or the desirability of a truly professional association. The mechanics of the plan are simple. It would set up definite requirements of formal training ("or equal") as a prerequisite or in the early stages of membership. The means for such training are already in existence. Putting them into effect would establish standards distinctly above the accident of a common occupation and the bonds of mutual assistance.

This objective is, essentially, very close to the aims of present educational programs within the Association. Despite notable accomplishments, the plaint still is that a relatively small percentage of the membership takes advantage of the opportunities. That would be corrected. True, if the program were formalized as a requirement, some prospective members might be discouraged. Others, in even greater number, we believe, would be attracted and stimulated to further progress. It would automatically eliminate many of the problems of eligibility and program that have plagued some of the local groups.

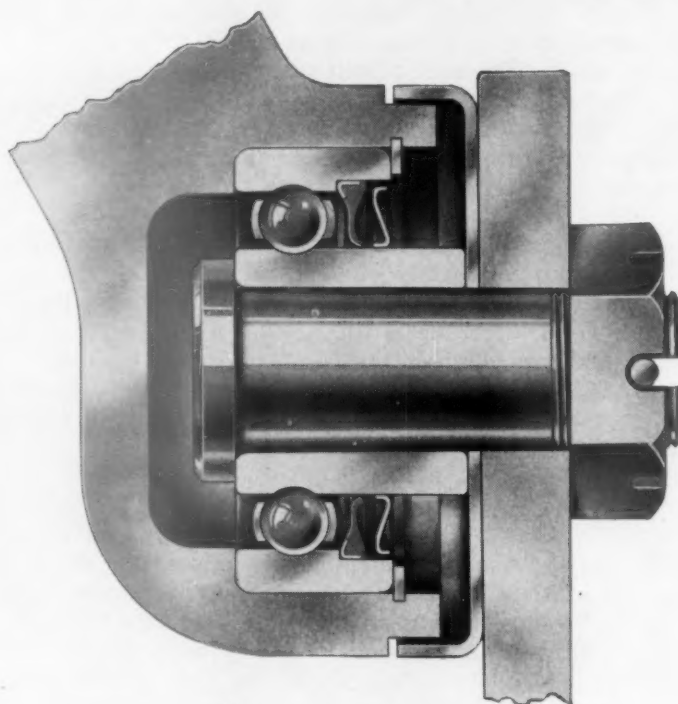
There is probably nothing which would give more professional meaning to the Association name and membership than such a development. Banking and insurance groups have followed such a course successfully. Purchasing groups could do it too.

*Stuart F. Henrity*



# FACTS

about **NEW DEPARTURE**  
BALL BEARINGS



Bearings are fully protected by flexible seal and metal slingers. Ample grease supply, kept free of contaminants, eliminates all need for relubricating. This means maintenance is zero.



## HAY RAKE BEARINGS... DESIGNED FOR NEGLECT

These **NEW** Departures in hay rake tine bar bearings have been developed to give both implement manufacturer and user bearings that are easily applied. Once installed, they can be entirely neglected—they are “built to be forgotten”!

New Departure hay rake bearings are designed to mount on standard machine bolts . . . or on flat-head, slotted studs like those shown in the sectional view. These special studs are available from New Departure.

When you specify New Departure ball bearings for farm implements, you are assured of bearings of proved capacity and performance. Complete details sent upon request.

Bearing bores are accurately sized to fit correctly on either standard machine bolts or on special studs shown. Bearings retained in tine bar end by simple snap ring. No drilling, tapping or threading required.

**BALL BEARINGS MAKE GOOD MACHINES BETTER**

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

For More Information Circle No. 207 on Inquiry Card—Page 17.



All buyers look for **Quality** in purchased parts and materials as the assurance of quality and reliability in the finished product. Where the national security is involved, this becomes the first consideration and no compromise with quality can be tolerated. The article on page 79 tells how Hughes Aircraft Company's purchasing department is geared to this requirement, starting with inspection and appraisal of vendors' facilities and dependability, and supported by exacting test procedures and performance records.

When a **New Company** starts out to manufacture a new product, without benefit of established precedents or sources of supply, there's a real challenge for the purchasing agent. The story on page 95 relates just such an experience, showing how imagination, persistence and knowhow overcame a series of knotty problems and helped spark the company's growth.

Practical knowledge about the **Products You Buy** makes possible more intelligent selection and purchase for satisfaction in use and lower end costs. Information in this issue covers a variety of everyday products—machine rolls (page 90), pressure sensitive tape (page 99), cable trough supports for electrical distribution systems (page 86), and some interesting applications of "black light" (page 117).

**Material Management** involves more than the internal company decisions and procedures that are usually associated with the term. For a completely effective program, equal attention must be given to the vendor's production scheduling, quality and cost controls. In these external phases, the purchasing agent's role is of paramount importance. The article "Your Vendor's Business Is Your Business" (page 111) is the third and final article in a significant series.

A unique business setup is described on page 71—a development and testing laboratory which does double duty as a **Pilot Plant** for the customer. The buyer brings his problem, with actual material or sample parts, and stands by as an observer while the technicians work out the answers under actual operating conditions in a concentrated one-day program. Set up as a vendor's service, with transportation by private plane as part of the plan, the lab is independently managed for complete objectivity and operates its own commercial job shop to provide representative production conditions. It has contributed as much to the development of the vendor's equipment as it has in solving the problems of its customers.



One of the most important and difficult decisions you may be called upon to make is the selection of **Purchasing Personnel** to staff your department. A management consultant experienced in purchasing presents a "double exposure" approach to the evaluation of job applicants on the basis of abilities and motivations. It gives a clue to what the person can do, and the probability of what he will do, on the job. It is only when both of these qualities are present that you have a well balanced individual who may be expected to give satisfaction in the job assignment. Turn to page 74.

Two practical articles on the **Legal Phases** of buying (pages 84 and 119) will help you avoid pitfalls in contract clauses and cases of default.

There's a wealth of information for purchasing men in these regular monthly departments: the Washington Report (page 13), New Catalog listings (page 17), New Equipment and Products (page 136), News of Your Suppliers (page 22), Association Activities (page 190), and Men in Purchasing (page 232).

next  
month:

**To Buy or Not To Buy—Expediting through Salesmen**  
**Fireproof Files Avoid Trouble—Damages for Delay**



## 3 kinds of help on sheet and strip steel

Sheet and strip buyers tell us that three kinds of purchasing help keep them coming back to Ryerson:

**1. WIDER SELECTION OF TYPES**—More than 20 kinds of sheet and coil stock are on hand in an unusually wide range of gauges—making it easier to get the exact steel needed for any requirement.

**2. GREATER PROCESSING CAPACITY**—The most extensive cutting and processing facilities in the steel-service industry enable buyers to get quickest service on requirements for special sizes, strip and sketch cutting, blanks, slit coils, edging, or any other processing.

**3. HELP ON SHEET AND STRIP PROBLEMS**—The large Ryerson staff of sheet and strip specialists gives buyers a valuable source of help in selecting the most satisfactory and economical stock—or in solving any other problem of application and fabrication.

In addition, sheet and strip buyers like the good packaging, the dependable weight and on-schedule delivery that they get from Ryerson—and the convenience of one-order buying of all steel products from the same source. So call your nearby Ryerson plant for 3-way help on sheet and strip needs.

## RYERSON STEEL

*PRINCIPAL PRODUCTS: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing, industrial plastics, machinery & tools, etc.*

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

For More Information Circle No. 208 on Inquiry Card—Page 17





# Bringing the Buyer to the Source

*Manufacturer's test laboratory performs  
dual function as customer's pilot plant*

**By George Lane** Director, Ipsenlab of Rockford, Rockford, Illinois

THE PLANE shown here winging its way over the Illinois countryside is bringing a purchasing agent to Ipsenlab of Rockford in a unique commercial arrangement by which the manufacturer's test lab becomes in effect the customer's pilot plant. By coordinating and combining a test laboratory and a semi-commercial heat treat shop in one building, this heat

treat equipment manufacturer accurately pretests customer process requirements and material specifications to determine correct equipment cycle and handling method. Transporting the prospect by private plane, for first hand observation of the tests, is a vital part of the service. Basic research, new design testing consulting, and materials develop-

ment round out the well balanced program of this facility.

The constant quest by equipment users and manufacturers for improved design, greater knowhow, and advanced technology has brought about the growth of the testing laboratory as a vital part of overall customer service. This is especially true in the field of production metallurgy.

TABLE I

**Customers' One-Day Observation Plan**

1. Interested parties emplane at home airport are flown to Rockford and brought direct to Ipsenlab with the necessary parts to be treated. This has been previously arranged through the Ipsen district sales engineer.
2. The job is recorded in detail as to production specifications, suggested process production rates, and materials and equipment utilized at the customer's plant.
3. Ipsenlab technical, shop, and sales personnel consult with customer representatives for complete details on the requirements involved.
4. Job is run through several cycles. The first of these is the simplest possible method considered to be adequate for the results required. The next is a more complicated cycle that has been closely determined to produce the end results required. This latter method is always the most costly, and is run only if the first does not achieve optimum results.
5. Hardness tests are taken.
6. Case depths are determined on the part and also on a sample bar. Micro sample is prepared for examination.
7. Hardness traverse is taken if required.
8. Photo micrographs are prepared.
9. If close carbon control is required, carbon bars are run and examined.
10. Preliminary report is prepared before the customer leaves, and further discussion carried out as indicated. A complete report is prepared for forwarding to the customer after he has returned to his home plant.

TABLE II

**Predicted Condition vs. Actual Results**

Part: Cam                      Steel: SAE 1010                      WT/part: 2.4 lbs.  
 Process: Carbonitriding                      Furnace: T-400-G

| Phase                      |                                     | Predicted                                | Actual   |
|----------------------------|-------------------------------------|--|--|
| Cycle                      | Fce. temp.<br>at heat<br>total time | 1600 F<br>1.75 hours<br>2.33 hours       | 1550 F<br>2 hours<br>2.58 hours                |
|                            | Oil temp.<br>high<br>low            | 150 F<br>5 minutes<br>5 minutes          | 250 F (reverse flow)<br>5 minutes<br>5 minutes |
| Atmos.                     | Endothermic<br>natural<br>ammonia   | 300 cfh<br>20 cfh<br>15 cfh              | 300 cfh<br>20 cfh<br>15 cfh                    |
| Specs                      | Case<br>hardness<br>(Superficial)   | .010-.015 inches total<br>.90-.91 R15N   | .12" effective,<br>.014" total<br>89-90 R15N   |
| Tray loading               |                                     | 63 pieces per tray—<br>vertical fixture. | same   |
| Production                 |                                     | 65 lbs/hr.                               | 58.2 lbs/hr.                                   |
| Tolerance—(Runout allowed) |                                     | .015                                     | .008   |

Although the laboratory has been an established part of modern business for many years, it is now becoming a new type of sales and merchandising tool by activating this "pilot plant" as a separate facility and equipping it with basic types produced by the manufacturer. Service conditions can thus be simulated accurately, so that production and metallurgical facts and figures can be determined and specifications substantiated in advance.

Ipsenlab of Rockford, Inc., a subsidiary of Ipsen Industries, is an outstanding example of this method. By using the testing lab as a pilot plant, with a high degree of efficiency and thoroughness, the end result has been satisfied customers. Improved production and product, of course, mean increased sales, but of great importance to industry in general is the fact that considerable basic research in metallurgy has been carried out and the results made available to all.

When Ipsen Industries set up this facility, it was made a separate and independent organization, as nearly self-supporting as possible. This approach proved wise, as it developed objective viewpoints for evaluating Ipsen equipment while providing the company's customers with the right answers. It is staffed with experts who are not held down to restricted thinking but are permitted to work up their ideas in an atmosphere of technological advancement.

**Pretesting Equipment Design**

One of the prime functions of Ipsenlab is to serve as a non-prejudiced proving ground for the design ideas developed by the parent concern's engineering staff. When the pilot models of new equipment are produced, they are brought to Ipsenlab and given a complete testing. Every aspect of equipment application, construction and control is thoroughly investigated. The resulting reports are submitted to the design engineers and suggested changes are made in the basic design as required. On many occasions, new ideas enter at this phase of the design development and a new approach is taken, abandoning the

original designs.

Development programs are more advanced than is possible in a specialized testing or research laboratory where most work is basically theoretical, since all types of furnace equipment are available and any production conditions can be simulated.

Controlled atmosphere cooling is a good example of a new technique developed and proved here at Ipsenlab. The customer or user is enabled to obtain equipment of maximum efficiency and dependability, with all of the kinks worked out before the first units are placed in the hands of users, even though the equipment may be entirely new on the market.

#### **Actual Production Conditions**

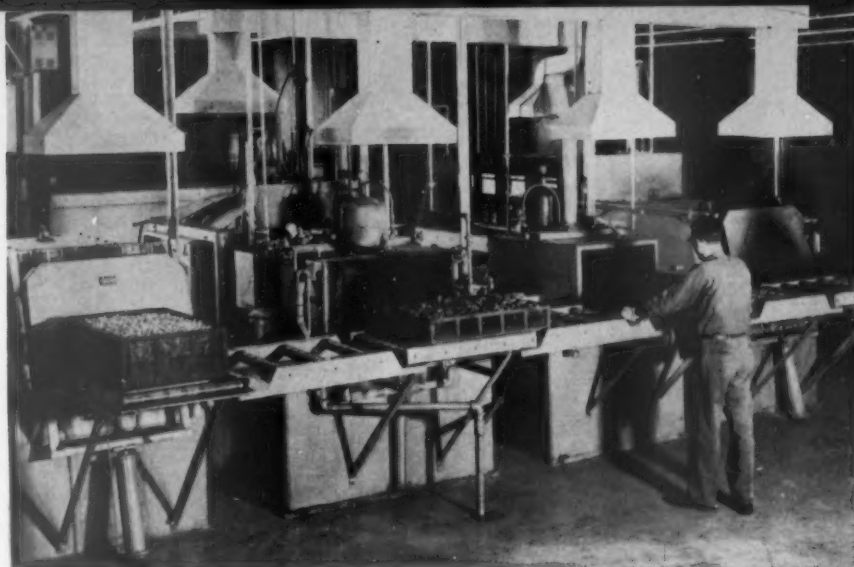
To further add to the authenticity of production conditions in the heat treat section of the laboratory, commercial heat treat jobs are solicited and scheduled in the same manner as that carried out by commercial shops. This provides a constant flow of parts of all types, sizes, shapes, and analyses for all the standard controlled atmosphere treatments. Thus the electrical and gas-fired furnaces and generators operate under actual service conditions. Continual operation soon reveals any "bugs" and other situations that point to possible improvements.

Suggestions brought in by field personnel and users of equipment can also be tried out under closely controlled conditions. The result has been many advancements and improvements leading to closer control, better heating rates, increased output, and more efficient automatic charging and discharging mechanisms.

#### **Processing Material Improved**

It soon became apparent that to obtain for the customer the very best heat treat production conditions, considerable research would be necessary on quenching oils and washing compounds for all types of processes using Ipsen equipment.

To thoroughly evaluate quench oils, a special tester was developed to determine oil breakdown characteristics. With this equipment, heat, agitation and time



**Heat treat room, showing commercial heat treat work in process. A steady flow of such work achieves actual service conditions ideal for close observation of the equipment and operations involved.**



**Laboratory test results are analyzed promptly and put into report form to evaluate equipment and procedures in terms of the customer's specific product and requirements.**

are closely observed to determine the life characteristics of all available oils. The result—a special blend containing the best combination of oils and additives to produce ideal quenching properties.

Other customer problems solved in advance include pouring techniques, elimination of distortion in tested parts, reduction of the need for inspection and gaging, and minimizing rejects and reworking operations.

#### **Customer's Observation Program**

A unique phase of this service is the one-day close observation plan, in which the interested parties are brought direct to

Rockford by Ipsenlab's own private plane, with samples of the parts to be treated, and actual tests are run with these observers on hand. The typical one-day program is outlined in the table herewith. The customer is returned to his own plant the next day with preliminary results of the test and in many cases with some of the finished heat treated samples for further evaluation with his plant management. A complete report is then developed and forwarded to him within a few days.

This method has cut procurement time to an absolute minimum, while assuring purchase of the right equipment, since both

(Please turn to page 268)



# PICKING PURCHASING PERSONNEL

Probably the most difficult and far reaching decision the department head is called upon to make is evaluating a prospective new member of his staff. Here is a technique that will help in arriving at a sound decision.

By John F. Gustafson

**SOME PEOPLE** are like chameleons, they reflect the personality any situation suggests. Others, like frogs, sit and croak the same old dirge no matter which way the wind blows. But most, including most of those who come seeking a job, fall somewhere in between the two. These are the ones it is hardest for the purchasing agent to understand and evaluate when he faces the job of selecting a new member for his department.

Here is an approach that may give new insight into this kind of personnel problem. Mentally, make a double exposure of the applicant before you, first picturing what he CAN DO, then picturing what he WILL DO. In other words, consider him first in the light of his abilities, and then in the light of his motivations.

This method first considers the applicant's capabilities—his physical characteristics, intelligence, mechanical and other skills leadership qualities, etc. Those abilities, rated by such expressions as "extremely gifted" or "a talented

person", are matched up against the particular requirements of the job.

Secondly, we may ask how well he will use those abilities. Is he industrious, responsible, ambitious, and stable? Or will he fritter away his time and talents? This part of the appraisal deals with those motivations (or lack of them) referred to in such familiar phrases as "What a great waste of talent!" or "... if he would only apply himself". Its purpose is to determine whether the applicant has the right kind of drive to do his job.

To illustrate, here are two examples:

## Case 1 The Sleeping Genius

A young man of 25 is being considered. Late for his interview, he came in proudly wearing his Phi Beta Kappa key. He did well on the aptitude tests (IQ, mechanical and business sense) and had a pleasant personality. He had no hobbies, except perhaps watching TV. The thing he



Make a mental "double exposure" of the applicant, to help in determining what he CAN do and what he WILL do.

liked least about his last three jobs was the amount of what he considered unnecessary work they required. The quality he liked most about his wife was that she didn't push him the way his mother used to. He considered himself more like his father—quiet, calm, reasonable—than like his mother, who had tremendous energy and who, in his opinion, always made "much ado about nothing". He felt that his life had become much more relaxed after he graduated from college and left home to get married.

In answer to the question, "If you could do anything you wanted to, what would you choose?" he answered, "Buy an estate in England and live the life of a country gentleman."

In answer to the question, "What do you like least to do?" he smiled and said, "Get out of bed in the morning."

A phone check with previous employers brought the comment that he had a lot of ability, if he would just get around to using it.

**Conclusion:** Not hired. Since the key to stimulate this sleeping genius was not revealed, he would be a poor risk. He CAN DO, but probably WILL NOT DO.

## Case 2 The Energetic Dunce

This fireball arrived an hour



**The Sleeping Genius**

**CAN DO but WILL NOT DO**

early for his interview, wearing his "recognition tie clasp", an award for devotion to cheer leading duties in his school days. His range of college interests had been unbounded—sports, fraternities, dances, fellowship clubs—in fact, these important social and extra-curricular activities had so dominated his time that he didn't get around to graduating. But then, he explained, business is "who you know, not what you know".

The reason he wanted to leave his current job was that it entailed traveling three or four nights a month, which interfered with his community activities. Also, his company wouldn't give him, an assistant to do the "paper work" and his time was already taken up visiting with salesmen.

He did poorly on the aptitude tests. A phone check with a previous employer brought out the observation, "We offered him a place in sales. I never could understand why he didn't go into that line, he is so much better fitted for it than for purchasing."

**Conclusion:** Not hired. Plenty of social WILL DO, but lacking in purchasing CAN DO.

These two cases, of course, are rather extreme. Usually individuals cannot be put into categories with such ease. However, this difficulty increases the need for a helpful guide.

**Neither ability nor motivation alone is enough for satisfactory performance on a responsible job.**

**You would not be happy with either of these applicants, who are at the two extremes.**

**Look for the man who CAN DO and WILL DO**



**The Energetic Dunce**

**WILL DO but CAN NOT DO**

All methods for securing factual information about the applicant should be used: correspondence, application blank, tests, interviews, phone checks, resumes, school records, references, etc.

What are the qualifications to seek in future members of the purchasing team? Here are some of the important ones that we have found it pays to look for.

#### **Can Do?**

**Physical characteristics.** In this category are included energy level, state of health, and personal appearance. Energy level may be gauged by the degree of enthusiasm shown during the interview or by a phone check to his last employer, by his accomplishments, or by some chance remark such as, "My wife can never get me up in the morning." If there is any question about his health, the company doctor can check. And of course a clean, neat appearance is essential for a purchasing agent.

**Personality.** Since most purchasing agents work with many people; both inside and outside the company, a faculty for getting along with others is desirable. In days of shortages, some purchasing agents' persuasiveness with suppliers gained the admiration of the sales department. Today the growing importance of intra-department cooperation, public

relations, and association activities makes new demands on the PA's personality. In some cases, the "company personality" will influence this requirement.

It is important to realize that the growling, scowling, introverted, "Who's got a deal?" caricature of the purchasing agent is as obsolete as the notion that purchasing is really an adjunct of the accounting department.

**Ability to think.** This is a constant quality needed for the rigors of purchasing. Intelligence is a part of this ability, and can be tested objectively, as can mechanical aptitude if that is an important requirement. Experience and educational records will also give helpful clues.

But more than just facility with figures, words, and charts is required. Common sense and good judgment (not always synonymous with high IQ) are necessary, and can be searched for during the interview and by checking past experience. Look for evidence of emotional maturity, too; it backs up common sense and good judgment.

But remember that good judgment is not to be confused with conservatism. Rather, the concept of the "calculated risk" enters into appraisal here. A discussion of past business problems might be revealing. Ability to understand "long run" or "company

standpoint" factors is a good indicator. One note of caution: Because the applicant may agree with his interviewer on a point does not automatically prove that he is brilliant, wise, intelligent, clever, and of sound mind!

**Ability to express ideas.** The faculty of clear communication is very important. Conversations with salesman, co-workers, suppliers association members, and the public are a part of the job. Letter writing, contractual agreements, specifications, surveys, reports, and just plain memos have come to be "tools of the profession".

This need for the modern purchasing agent to be able to express himself was dramatically highlighted in the underlying reason given for the Westinghouse "Cost Reduction Clinics", reported in the July 1955 issue of *PURCHASING*. Here is how the article began:

"Progress and profits result when purchasers and suppliers work together as a team. To work together you have to know each other, know the end product, know the objectives, policies, and problems involved. This is the key to product improvement, cost reduction, and sound business relationships. . . . Historically, much if not all of management's attention has been directed towards internal communications. Therefore it was believed that meetings of this type would help bridge the open circuits in the lines of external communications."

Note in this statement the importance that is accorded to communications, and the assumption that purchasing agents must have the ability to express themselves and to communicate ideas.

Ability to express can be determined through vocabulary tests; noting the applicant's conversation during the interview, careful reading of application letter and form; checking past experience, educational background and extra-curricular activities, hobbies such as reading, writing, public speaking, and photography.

**Leadership.** President Eisenhower recently defined this as "the ability to stimulate people to do what needs to be done, and at

the same time have them think it is what they wanted to do." If you need this type of ability in the applicant (e.g., if you are looking for a future department head) it is fairly easy to recognize from his past positions in school, in the community, and in his work experience.

It would be confirmed during a discussion of what his business goals are. (But before making this a mandatory requirement for all who are hired, consider the frustrations in a department composed of twenty "potential presidents".

### Will Do?

And now for the qualities that determine what a person will do with his inherent or acquired abilities. It is helpful to think in terms of "has done", since the pattern of past actions reflects work habits. Here are some of the important traits:

**Responsibility.** This includes such attributes as dependability, industry, perseverance, self discipline and self reliance. Does he see the job through, and feel pride and satisfaction in a job well done? A person is responsible if you feel you can delegate authority to him and then forget about the assignment, confident that it will be done right.

A clue to this quality will come from past accomplishments, such as rate of business progress, nature of present job, or important special assignments, either in the company or in the community.

Maybe he worked his way through school, or maybe there is something in his personal life that

denotes this characteristic. Some people are magnets for difficult and essential jobs. Though such a person, if hired, may not stay in your department very long before moving on to a position of greater responsibility, he will be invaluable while he is around.

**Stability.** This quality includes loyalty, steady progress, and emotional maturity. Instability can be recognized from a pattern of past actions that includes job-jumping, never being able to make up one's mind, thinking only in the short run, and self indulgence. A note of caution: Too much stability might be due to lack of ambition, and may mean that the applicant will not respond to incentives of advancement.

**Ambition.** What goals has he set? If these are realistic and if he is making steady progress, it is reasonable to assume that he will continue working toward those ends. Self improvement, enthusiasm, a high energy level and evidence of the "extra push" go along with ambition.

There is a quiet resoluteness about some milder temperaments that signifies ambition in perhaps the most desirable form, since it is a sign of maturity.

Like most things in excess, too much ambition can be bad. If the overt qualities of enthusiasm, high energy level, and the like are not backed by inner resources, then we have the rah-rah boy of Case 2. Then, too, a person with great ambition and great cleverness may not be satisfied with less than spectacular progress, and to achieve it may take the attitude that "My ends justify any means." Such a person may do well on his own job, but disrupt the operations of his fellow workers.

The strength of an applicant's ambition may be estimated by analyzing his desire for money, social status, and security; his family's or his wife's goals; or what standard of living he needs. Other measures of his ambition may be seen in the importance he attaches to social symbols such as automobiles, houses, neighborhood, clothes, clubs, etc.

Judging from observation of  
(Please turn to page 272)

**THE AUTHOR** is currently engaged as a management consultant, with McKinsey & Company, Chicago, after successfully handling a responsible purchasing position with McMillen Feed Mills, Fort Wayne. He wishes to thank Simon Heemstra, Director of Sales Education for the McMillen organization, and McMurtry, Hamstra & Company, personnel consultants, Chicago, for their assistance in preparing this article.



## What is the best PREPARATION FOR PURCHASING?

*Rapid advances in industrial science have added to the responsibilities of today's purchasing agent. Increasingly, he must know more about the technical side of his own company's requirements and about his suppliers' operations. To find out how purchasing is blending technical knowledge with its own unique skills and experience to do a better buying job, we asked purchasing agents in all types of industry a group of pertinent questions. Their answers and some of the conclusions drawn from them are summarized here.*

Prime requisites for a successful buyer (over and above the basic qualification of commercial ability) are named as:

- 1. Business administration training and experience**
- 2. Engineering training and experience**
- 3. Shop experience**

(1) was selected by 63%, (2) by 34%, and (3) by 24% of the respondents. Such requisites as sales or marketing experience were chosen by only 3%. (Percentages total more than 100 since multiple choices were made)

There is a growing tendency to select buyers on the basis of technical or shop background, compared to 10 years ago.

**89% report a trend toward choosing buyers who have technical background. Only 11% say there is no trend in this direction.**  
**54% report a trend toward choosing buyers who have shop experience.**  
**46% see no trend in this direction**

Almost one out of four purchasing departments now have engineers among their personnel. And almost half of those surveyed have some college graduates and or shop-trained personnel on their staffs.

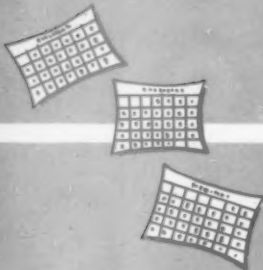
**23% report they have engineers among their buyers**

**47% report they have non-engineering college graduates**

**42% report they have shop-trained personnel**

**43% report they have buyers qualified by on-the-job buying experience**

(Percentages total more than 100 because of multiple answers)



**The average length of purchasing experience of buyers in the departments**

**represented in the survey is 8 years, 10 months.**

A substantial majority of the companies represented are making special efforts to further the technical education of their buyers. Of the 70% making these efforts, these are the preferred methods, in order of mention:

**Departmental training**  
**Payment (in full or part) of tuition for outside courses**  
**Company-wide training programs**  
**N.A.P.A. educational programs**

**Almost a third (32%) of the buyers in departments represented in the survey are now taking technical courses after working hours.**



## WHAT THEY SAY

"While I think engineering training and business administration training and experience are both very desirable and valuable, I consider an honest-to-goodness interest in purchasing as a profession and imagination and initiative more important."

"Internal training is an important requisite."

"I believe we will lean more and more toward engineering experience as a background for buying. The trend is also toward college graduates over shop trained personnel."

"The best college training for purchasing would be a combination business-engineering degree. Each phase is equally important."

"While technical knowledge is an asset, there is no substitute for on-the-job experience in buying, especially where engineering and purchasing departments are cooperative."

"Experience plus the curiosity of a scientist makes the best purchasing agent."

"Purchasing is a science in itself. Engineers and technicians, who become buyers, have a tendency to operate strictly by the book."

"A good sound business education with plenty of common sense and good judgment are perfect requisites for an average buyer."

"Regardless of a buyer's commercial ability or education, or general experience, he will be a more valuable man in a purchasing department if he has had shop experience acquainting himself with his company's products and the problems of their production."

"College training, or the ability to think independently, is highly desirable—the rest we can teach 'em."

"I believe good buyers are developed by on-the-job experience under good supervision, rather than through formal education. Of course, technical training, particularly engineering, is a definite asset."

# We Must Buy QUALITY

**By Barry J. Shillito**

Director, Materiel Services,  
Hughes Aircraft Company,  
Culver City, California



**BARRY J. SHILLITO**, Director of Materiel, served in World War II as both a fighter and bomber pilot, and has eleven years of experience in industry and government in various materiel, production, engineering, and management capacities. Prior to joining Hughes Aircraft Company in 1954, he was with the Air Force as Section Chief and Commanding Officer of the Fighter Fire Control Section of the Procurement Division at Wright Field.

**O**UR COMPANY manufactures such things as aircraft fire control systems and Falcon guided missiles—devices requiring a degree of precision craftsmanship that was considered unobtainable less than a dozen years ago. Since the slightest flaw in one of these products could enable an enemy aircraft or missile to decimate an entire American city, we believe it is a patriotic duty as well as sound business practice to place primary emphasis on quality in our procurement program.

The extent to which we are prepared to go in maintaining optimum quality standards is indicated by the fact that one of our recent orders for electronic components went to a subcontractor whose quoted price for the parts was three times that of his closest competitor. Why? Because we knew that the company that got the order could deliver the quality we required—and because we had some doubts as to the competitor's ability to do so.

Perhaps you are wondering whether it's possible, in this enlightened age, for one supplier to have what it takes to do a job three times as well as a competi-

tive firm. Of course, for most practical purposes, that isn't the case. But in the Hughes Aircraft organization, we can't afford to compute the value of quality on a percentage basis. We must have the best, regardless of cost.

Obviously, we don't always patronize the high bidder. Quite frequently we are able to get the best at bargain rates. But we never knowingly gamble on quality.

## **Big Buying Program**

Our task in recent years has been somewhat complicated by rapid expansion, for Hughes has grown from a one-plant firm, which in 1940 employed only about 2,000 workers, into a three-plant company with more than 20,000 employees. However, since this development has inured us to a steady diet of changes and improvements, we believe it has been something of an advantage from the purchasing viewpoint.

The extent of our current procurement program is indicated by the fact that in 1955 we issued 150,000 purchase orders, worth over \$130 million, for 345,000 different items made in 43 states by

some 5,000 vendors, of whom 4,250 were in the "small business" category.

Incidentally, we are not among those who claim that our patronage of small businesses is strictly a matter of altruism. It just so happens that small specialty manufacturers are, on the whole, better prepared to deliver what we want in the way of quality and quantity.

Most of the 1,000 workers in our materiel group are concerned with traffic and transportation, receiving, warehousing, and surplus materials. Only 188 have direct purchasing responsibilities.

## **Purchasing Organization**

Until the early months of 1956 our materiel organizational structure was centralized. It is now being decentralized to a great extent, for our three plants have few material requirements in common. Buyers in our headquarters plant at Culver City will continue to issue orders for items used in all three factories, since we appreciate the advantages and economies of quantity buying as much as anybody else. However, most procurement activities at





**P. G. HART**, Manager of Materiel, saw combat service with the Air Corps in World War I. For nearly four years during World War II he served as Contracting Officer and Plant Representative, with the rank of Lt. Col., administering all AAF contracts with Ford Motor Company at Dearborn, Mich. In addition, prior to joining the Hughes organization, he was for three years a civilian contracting officer for the Air Force.



**S. H. BELLUE**, Manager of Materiel, has more than twenty years of purchasing experience in West Coast industry, and has been with the Hughes Aircraft Company for the past fifteen years. He is an officer of the Purchasing Agents Association of Los Angeles and a member of the Board of Directors of the West Coast Electronic Manufacturers Association. He also serves on the Planning Group at UCLA for adult education.



**L. J. LEVISEE**, Manager of Procurement and Services at the Tucson plant, has spent the past sixteen years in responsible positions in procurement and material control. Among his assignments were: Senior Chief Supply Officer of U. S. Lines Fleet; Material Agent for the New England Shipbuilding Company, producer of Liberty ships; Manager of Material and Production Control at Saco Lowell Shops.

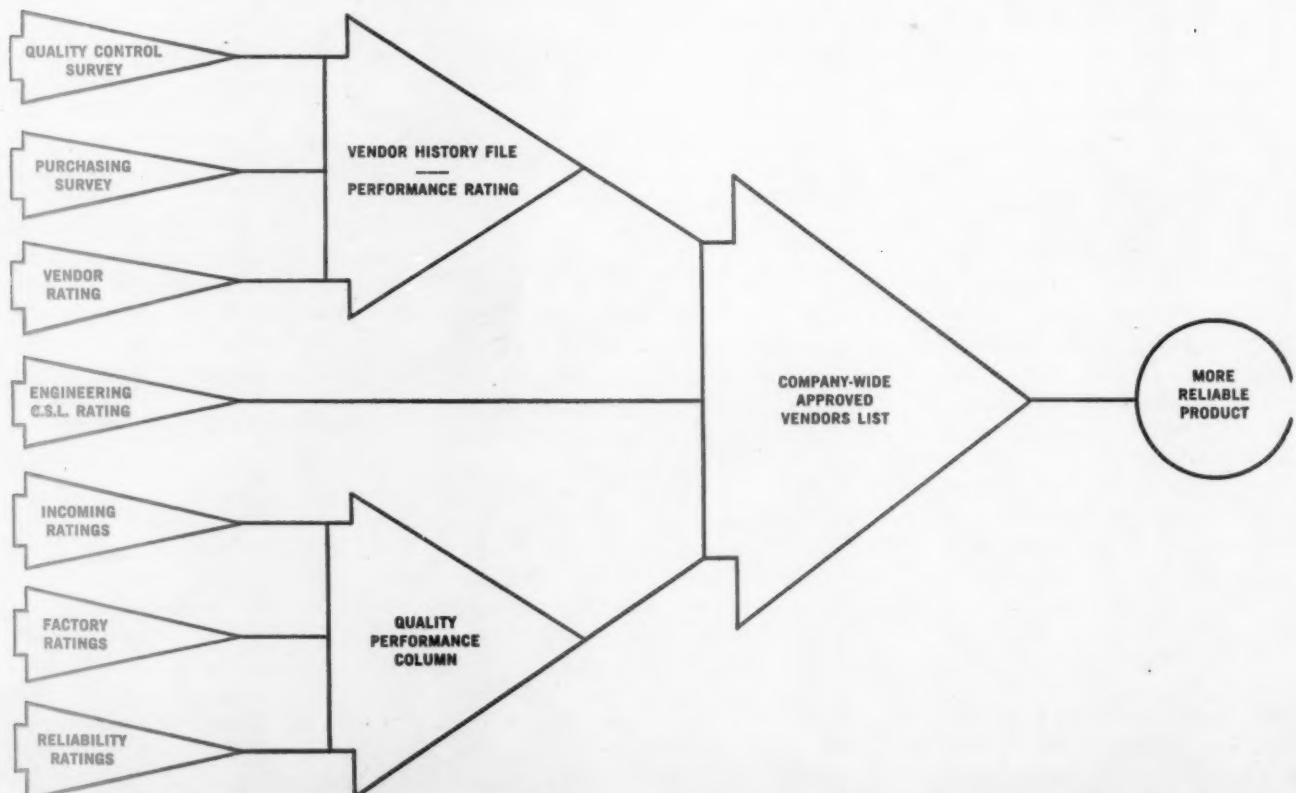
Culver City will henceforth be tailored to meet the requirements of a mushrooming research and development program.

Basically independent departments will conduct materiel operations for our plant at Tucson,

Arizona, which produces guided missiles, and for our plant at El Segundo, California, which manufactures aircraft fire control systems.

Top responsibility for buying and related materiel functions in

our Culver City and El Segundo plants, respectively, has been vested in Materiel Managers P. G. (Perc) Hart and S. H. (Penny) Bellue. At Tucson, Manager of Services L. J. (Jim) Levissee maintains production and materiel



Surveys, ratings, and performance records are all directed to one objective—a more reliable product.

control activities in addition to the materiel operations as required at our other divisions.

The production control group at Tucson comprises administrators, engineers, inspectors, and other personnel who work closely with fourteen of our more important subcontractors. Their objective is to help us obtain on-schedule deliveries of quality products by providing the vendors with the sort of technical information and assistance that is needed to fill our orders. Materiel control originates requisitions, and at Tucson we have attained improved coordination by handling this function in the same general organization that does the buying.

#### **Lead Time and Follow-Up**

In transactions that do not involve these fourteen special vendors at Tucson, expediting is done by a follow-up man who is under the direct supervision of the buyer who places any given order. Because each buyer is thus familiarized with the performances of firms receiving his orders, a vendor's failure to meet our requirements is unlikely to be forgotten when he seeks repeat business.

To maintain reasonably close contacts with our more distant vendors, we have expeditors stationed in Hughes offices at New York, Chicago, Dayton, and Boston.

Like all procurement departments in defense industries, we have not yet found the perfect solution to our lead time problems—mainly because we never get quite enough lead time. However, we have found some very practical partial solutions that have helped to keep our "shortages" well under the current maximum level of 10%.

For instance, to determine as soon as possible what items we will have to purchase, we have organized a make-or-buy committee. It comprises representatives of our engineering, manufacturing, and materiel departments. It meets whenever a Hughes product reaches the embryo developmental stage, and decides what parts of the product should be purchased. This enables our buyers to investigate potential vendors and obtain price estimates weeks and even

## **WHY 99% ISN'T GOOD ENOUGH**

Hughes buyers impress vendors with the fact that an order from Hughes represents an exacting requirement, because Reliability is "the priceless component".

If we set 20 hours without servicing as a goal for a plane's electronic system, it means that we can tolerate only one parts failure per 100,000 parts hours. Reliable national defense demands airborne equipment with a life of better than 20 hours without servicing.

The main standard of reliability is the quality of the separate parts used in the equipment—for a chain is only as strong as the individual links.

Suppose that purchased parts have a reliability of 99%, and that 100 such parts go into an electronic system. What is the probability that this equipment will operate as it should?

Multiply the 99% by itself as many times as there are parts in the system. With 100 parts, the reliability percentage figure comes down to 36.5%, which means that the equipment would probably fail in its mission two times out of three!

The more complex this equipment becomes, the further its reliability would be reduced. With 300 parts instead of 100, at a 99% rating per part, the reliability would be a mere 5%, with a probability of failure 19 times out of 20!

The equipment Hughes makes has many more than 300 parts.

Hughes buyers can't afford to gamble on quality.

months sooner than might otherwise be expected.

Similarly, we are getting improved cooperation from engineering and manufacturing departments now that we have a staff of purchase engineers. In addition to investigating cost reduction ideas, they maintain contacts with other departments for the purpose of passing along useful information to buyers. Further, they survey potential vendors' plant facilities and compile a list of approved suppliers which is most helpful in obtaining bids and issuing purchase orders.

#### **Personnel Policies**

In order to coordinate the efforts of our decentralized materiel groups, the Director of Materiel Services confers monthly with the Managers of Materiel and Services from all three plants. At these meetings, operating policies are reviewed in the light of current conditions and problems. If necessary, they are revised.

Because of Hughes' status in

the electronics field, it is natural that we have been among the first procurement groups to make use of computers and other facilities associated with the phenomenon of automation. Such facilities have enabled us to handle as much as 35% more paperwork with 10% fewer people, and by improving current systems we expect to attain a much higher level of efficiency before the end of 1956.

However, contrary to some prognostications, we feel that the role of automation in purchasing is merely to minimize routine office drudgery. We do not look upon it as something that will eliminate the competent clerical worker—and especially not the buyer with knowhow and imagination.

Our policy in hiring buyers is flexible to the extent that we do not expect reliable, experienced men to accept employment beneath their qualifications in our organization. However, most of our buyers are men who started to work for Hughes in follow-up or other related material activities

and have earned promotion within the group. Whenever the alternative is open to us, we believe it is good morale-building practice to fill our more responsible and better paying positions by promoting those who are already on the payroll.

Executive responsibility in our purchasing set-up begins at the level of the Assistant Purchasing Agent, who is authorized to sign orders for expenditures up to the value of \$5,000. Orders involving greater sums, up to \$25,000, may

be signed by a Purchasing Agent. Beyond that, up to \$50,000, they may be signed by a Materiel Manager. Any order exceeding \$50,000 in value requires the signature of the Director of Materiel Services, and orders of \$1,000,000 or more must be approved by the General Manager.

### Educating the Supplier

In placing emphasis on quality in our procurement efforts, we have learned that we can't get what we want simply by writing

ironclad specifications and conducting rigid inspections. While these things are essential, they do not offer complete protection against the careless vendor or the one who wants to put something over on us.

By paying reasonable prices, and by providing technical assistance for those suppliers who need it, we believe we have eliminated the major factors that might serve as incentives for poor vendor performance. But this in itself does not offer the extra incentives that

**HUGHES AIRCRAFT COMPANY**  
**SUPPLIERS SURVEY REQUEST & REPORT** FILE NO. 10867

HAC CONTRACTUAL REQUIREMENTS - CONTRACT NUMBER

SUPPLIER NAME: **Dear Electronics**  
STREET ADDRESS: **206 Elm Street**  
CITY: **Ashtabula, Ohio**  
STATE: **OH** ZIP: **44004**  
CONTACT: **E. H. Johnson**  
**E. F. Hall**

SURVEY CATEGORIES: **419-Transformers and Reactors**  
SURVEY PRIORITY: **2** YES ☐ NO ☐  
COMMENTS: **Vendor being considered**

REQUEST APPROVED BY: **J. C. Harris**  
PERSON CONTACTED: **E. H. Johnson**  
**E. F. Hall**  
**A. B. Smith**

SURVEY BY: **E. Jones**  
APPROVED BY: **C. A. Hall**  
REMARKS: **1. Adequate**  
**2. Adequate**  
**This company listed below**

**HUGHES AIRCRAFT COMPANY**  
**PURCHASING SUPPLIERS FACILITY EVALUATION**

SURVEYED BY: **J. Adams** DATE: **2/21/56**  
SUPPLIER NAME: **Dear Electronic Corporation, 206 Elm Street, Ashtabula, Kansas**  
TYPE OF SUPPLIER: ☒ SUBCONTRACTOR ☐ ELECTRONIC ☐ OTHER  
HAC REQUIREMENTS: **Test Equip**  
OCCASION OF REQUEST: **As Requested**  
OPEN HAC P.O. YES ☐ NO ☐ PRODUCE  
PERSONS CONTACTED AND THEIR TITLES: **Emmett Plant**  
REMARKS: **Research and dev handle R & D for test equipment above field. The transformer and appears to be in assembly.**

**HUGHES AIRCRAFT COMPANY**  
**PURCHASING FACILITY EVALUATION CHECK LIST** PAGE 1 OF 2  
DATE: **2/21/56**  
VENDOR NAME: **Dear Electronic Corporation**  
ADDRESS & PHONE NUMBER: **206 Elm Street, Ashtabula, Kansas** **7-1450**

ORGANIZATION  
A - MANAGEMENT ATTITUDE  
B - ENGINEERING: **32**  
1 - SE. ENGINEERS: **8**  
2 - JE. ENGINEERS: **14**  
3 - DRAFTSMEN: **10**  
C - LABORATORY: **10**  
1 - METALLURGY: **10**  
2 - ELECTRONICS: **10**

**PURCHASING FACILITY EVALUATION CHECK LIST CONT.** PAGE 2 OF 2  
ITEMS: **See list**  
COMMENTS: **See list**  
A - TYPE & AGE: **See list**  
B - MAINTENANCE: **Adequate periodic maintenance**  
C - SPECIAL EQUIPMENT: **Coil winding machines**  
D - EQUIPMENT CONTROL: **Electric automated**  
E - AUTOMATION: **None**  
FACILITIES: **Adequate for incoming and finished product**  
A - STORAGE: **Adequate for incoming and finished product**  
B - TOOLING & EQUIPMENT: **Luxury tool store room**  
MANUFACTURING TECHNIQUES: **In line assembly**  
C - MOVEMENT OF PARTS: **Auto hoists for small parts. Fork lifts and pallets for heavy equipment.**  
SECURITY (LEVEL): **Top Secret, 4: Secret, 62: Confidential, 104.**  
A - EMPLOYEES: **Top Secret, 4: Secret, 62: Confidential, 104.**

**HUGHES AIRCRAFT COMPANY**  
**INSPECTION AND TEST REPORT** NO. 143798

ITEM NO. **1** DESCRIPTION **Small Pulse Transformer**  
QUANTITY **1** UNIT **EA**  
DATE **2/21/56** BY **J. Adams**  
TESTED BY **J. Adams** TESTED ON **2/21/56**  
TESTED AT **Ashtabula, Ohio**  
TESTED FOR **Resistance, Inductance, Capacitance, Dielectric Loss, Temperature Coefficient, etc.**  
TEST RESULTS **See list**  
TESTED BY **J. Adams** TESTED ON **2/21/56**  
TESTED AT **Ashtabula, Ohio**  
TESTED FOR **Resistance, Inductance, Capacitance, Dielectric Loss, Temperature Coefficient, etc.**  
TEST RESULTS **See list**

Hughes' concern with the quality of purchased materials and parts is evidenced by the detailed and comprehensive evaluation of vendor's facilities, supported by thorough inspection and test procedures.



lead to top performance.

Therefore we have gone all-out in our efforts to convince our suppliers that their work for us is important, and that our rigid requirements are not just annoying manifestations of engineering ego, but are details vital to national security.

Our efforts in this direction were particularly rewarding last November, when we staged a series of "Reliability Road Shows" for vendors in the Los Angeles, New York, Chicago, and Dayton areas. In Dayton, for example, our show attracted 400 key men from supplier firms.

Each show was a day-long affair during which quality control problems were emphasized in talks made by leading authorities and in color films. In addition to our own top materiel personnel, the speakers included such men as Col. C. E. Demberg, Chief of the Aircraft Division, Directorate of Procurement and Production at the Air Force's Air Materiel Center; Brig. Gen. V. R. Haugen, Deputy Commander for Development at the Wright Aircraft Development Center; R. M. Hanftl, Hughes' product engineering head; and J. W. Black, Associate Director of Hughes' guided missile laboratories. The color films included presentations on "Electronic Maintenance in the Arctic" and "The Priceless Component".



Hugh O. Butler, Hughes procurement counsel, discusses a revision of contract terms with a vendor's representative. Constantly changing material requirements are characteristic of the rapidly developing aircraft industry.

Following morning and afternoon sessions in each instance, there was a discussion period during which the guests were invited to ask questions. We could tell from the number of questions that the shows were arousing interest, but we didn't know how well they were serving their purpose until one vendor's representative remarked:

"You know, until today there wasn't a single man in our company who realized that a failure in just one of those tiny switches we've been making for Hughes might enable an enemy to drop an H-bomb on our plant!"

That, of course, is what our buyers have constantly in mind, on every purchase, and is exactly the point we were trying to make.



With a volume of 150,000 purchase orders issued annually, processing and records represent a correspondingly large necessary activity in procurement. Hughes has automated some paperwork procedures, but relies chiefly on a competent, well trained clerical staff.



Incoming shipment at Tucson. Hughes' materiel organization embraces procurement, traffic, receiving, materiel control, and surplus materiel control. At Tucson, it is also responsible for production control, office services, and outside production.

# How Courts Regard Default in

*Judicial precedent stresses principle of equity in assessing damages, but wilful breach usually bars recovery of values given in part performance*

**C**ONSTRUCTION EQUIPMENT was sold for \$29,412.78 in California under a conditional sale contract. After paying \$22,832.67 the buyer defaulted in the payment of the last three instalments. When the seller seized the equipment the buyer sued to recover the payments he had made.

It was provided in the contract on the part of the purchaser:

"Should I fail to make any monthly payment above specified when the same is due then the entire unpaid balance or purchase price shall at your option become immediately due and payable and shall bear interest thereafter at the highest lawful rate and I agree to make full payment of such balance.

"Should I return such chattels to you or if you repossess said chattels, then you may retain all payments theretofore made as compensation for use of said chattels and you may, at your option, sell said chattels at public or private sale with or without notice and credit the net proceeds after expenses on the amounts unpaid hereunder. Any balance over the said amounts unpaid shall be paid to me on demand. If the net proceeds are insufficient to cover the amount unpaid hereunder I agree to pay any deficiency on demand."

When the three last instalments were several months past due, the seller notified the buyer that unless the balance was paid within a stipulated time he would retake the equipment. When these payments were not made and the

seller had seized the equipment, the buyer brought suit for the recovery of the money he had paid.

## **Unjust Enrichment Denied**

In support of his action the purchaser relied on a decision of an action in that state for the recovery of a down payment of \$1,500 under a contract for the purchase of real estate when the contract was cancelled by the seller for the purchaser's default in making the agreed payment. There the court had said of the disposition of payments made by a buyer when the contract had been cancelled by the other for the nonpayment of subsequent instalments:

"It is fundamental, of course, that the gravamen of an action grounded on unjust enrichment is the equitable principle that a person should not be allowed to enrich himself at the expense of another. It presupposes the acceptance and retention of a benefit by one party with full appreciation of the facts, under circumstances making it inequitable for the benefit to be retained without payment of a reasonable value thereof."

This rule, as described by a New York state court, to which reference is made in this decision, is, "It is an obligation which the law creates in the absence of any agreement when and because acts of the parties or others have placed in the possession of one person money or its equivalent under such circumstances that in equity and good conscience he ought not to retain."

In his defense to the action for the recovery of these equipment instalment payments the seller contended that this rule applied solely to real estate and had no relation to the conditional sale contracts of chattels.

"The primary consideration," said the court of this defense, "is the avoidance of unjust enrichment at the expense of the breaching party. We do not believe that where unjust enrichment can be proved courts should draw technical distinctions as to the type of contracts or property involved in order to obtain different results, but rather that the rule in all these classes of cases should be the same."

This rule, applied here to purchase contracts of chattels and personal property, mitigates the injustice wrought by the forfeiture clauses in conditional sale contracts, which have been described by one writer as follows:

"The law, while looking with righteous abhorrence on forfeitures and washing its hands of their enforcement after the manner of Pontius Pilate, yet has been reluctant to intervene with affirmative relief or to formulate any consistent principle condemning the validity of cutthroat provisions which in their essence involve forfeiture. Although the law will not assist in the vivisection of the victim it will often permit the creditor to keep his pound flesh if he can carve it for himself."

The California court hearing this equipment controversy ap-

# t in Conditional Sale Contracts

By Albert Woodruff Gray

plied this rule of law against unjust enrichment to the employment by sellers of forfeiture and cancellation clauses in conditional sale contracts for their own benefit. It referred to an earlier decision in that state. A down payment of \$5,000 had been made under a purchase contract for \$93,000, with a further payment of \$15,000 to be made in escrow and the balance to be paid by monthly instalments of \$1,000 each. In the contract was the provision that if the purchaser should fail to deposit this escrow money the sellers should retain the down payment of \$5,000 as liquidated damages.

The buyer failed to make the escrow deposit and sued to recover the down payment of \$5,000. In its denial of a recovery by the buyer, the court set out the rule which was followed in the decision of this recent action by the purchaser of equipment for a recovery of the instalment payments made before his default.

"It has frequently been stated that the vendor may retain payments as an alternative remedy in an action for damages for breach of a contract to purchase real property. It is now settled however that the defaulting purchaser may recover part payments after further performance under the contract has terminated if he proves facts justifying relief.

"One who is sued for damages is required to pay no more than just compensation, making due allowance for benefits received by

the injured party, even though his breach is wilful and deliberate, but one who sues for restitution of value that he has given in part performance can recover none of it if his breach is wilful and deliberate."

## Mutual Rescission

Another phase of this principle of law was featured in the cancellation of an instalment purchase contract for \$150,000 of the stock of a Connecticut utility corporation. Of this amount the purchaser paid \$60,000. When later he became ill and was unable to continue his payments under the agreement the seller wrote, "Please take notice that unless

said agreements are performed and said payments made on or before the 31st day of March I shall regard and treat said property as divested of all interest which you may now have, if any, therein."

Within a couple of months the purchaser died. When demand was made for the refund of this \$60,000 paid to the seller he refused to pay and suit was brought for its recovery. In an award of judgment against the seller for the recovery of this money the Connecticut court said of circumstances of this character under which substantial amounts have been paid by a purchaser, followed by his default and the termination of the contract:

"Under these circumstances both parties must be regarded as having treated the contracts at an end, and such action is equivalent to a formal and mutual rescission. This being so, the seller cannot be allowed to treat the contracts as dead to the prejudice of the estate of the buyer and yet alive to the advantage of himself.

"The contracts being thus at an end, the seller claims by right of forfeiture the \$60,000 paid by the purchaser although the contracts contained no clause of forfeiture. If this claim is sustained, the purchaser pays and the seller receives that sum of money for nothing save the promise of the seller, from which he now claims to be freed. And save this promise, the seller parted with nothing, not

(Please turn to page 284)

## REFERENCES

*Bird v. Kenworthy*, 265 Pac. 2d 943; 277 Pac. 2d 1, California

*Major-Blackeney Corp. v. Jenkins*, 263 Pac. 2d 655, California

*Miller v. Schloss*, 113 N.E. 337, New York

*Minnesota Law Review*, vol. 5, page 329

*Baffa v. Johnson*, 216 Pac. 2d 13, California

*Plum v. Smith*, 62 Atl. 760, Connecticut

*California Law Review*, vol. 4, page 593

*Williston on Contracts*, vol. 5, sec. 1473 (Rev. ed. 1937)

*Barkiss v. Scott*, 208 Pac. 2d 367, California



# Cable Trough Supports for Electrical Distribution Systems

*Trough system offers economy, flexibility of design and alterations, easy maintenance, and higher cable ratings as compared with conduit*

**By Joseph Becher**

Assistant Chief Electrical Engineer, Burns & Roe, Inc.

**W**IRING COSTS can be reduced today with a relatively new development—expanded metal cable trough. Metal trough is economical, simple to design and install, saves space, and offers other advantages that, for many installations, make it the most suitable support for power and motor cables. We have worked with cable trough for several years. Other buyers, designers, and installers of such systems may be interested in a summary of our experience.

Evaluation of any new system is difficult unless there is some comparative basis by which it can be judged. Accordingly, we shall here use conventional conduit as the standard. For some applications, conduit still remains the best system of support, and we continue to use it in about 10% of our work. Comparisons, therefore, are intended only to clarify the advantages and limitations of cable trough. We use the expanded metal trough in preference to solid types because it is less costly, allows a higher cable rating, and collects less dust. We also prefer and specify the type of trough, like T. J. Cope's, that has standard fittings for elbows, risers, drop-outs, etc.

The engineer designing a new distribution system finds that trough is easier to work with than conduit. With conduit, every connector, drop-out, and new line must be designed in advance. Changes during installation are awkward and often costly. Trough installations are more flexible, as the trough can be cut and standard fittings inserted in straight

runs to permit late alterations.

The original design, too, is simpler. We estimate a saving of at least 10% in the manhours required to design the system for an average generating station.

Trough simplifies the good use of space near walls and ceilings. In regard to space requirements, we estimate a saving of about 50% as compared with conduit.

**Conduit and expanded metal cable trough drop-outs through the bottom of the trough support cables from motor generator.**



The saving is even greater if more than two layers of cable are laid in the trays, but we do not recommend this practice unless current ratings are very low and overheating is not a problem. These savings are not fully realized with more than one run of trough, as working room must be left between levels.

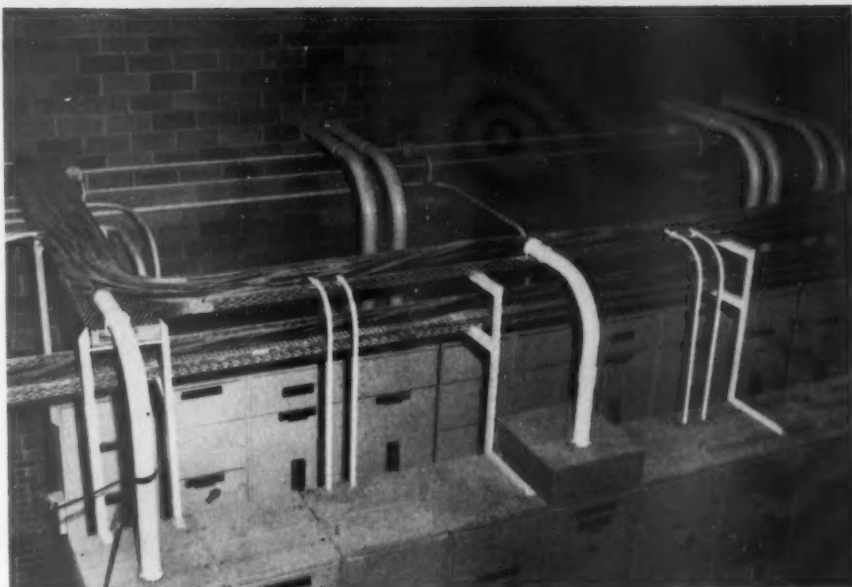
Space becomes most important when cuts must be made through walls or floors and when approaching control panels. Here trough is of great value. This holds true in vertical as well as in horizontal runs.

### Advantages of Cost

The resultant savings are immediately evident. Comparative costs can be broken down into two parts—installation and material.

Installation cost figures are determined almost exclusively by the time involved. Theoretically, a trough system could be installed in less than half the time required for a conduit of equivalent capacity. The savings in installing the cables are probably even greater, as cable is simply laid in place. On the average, we estimate a saving of about 25% in installation costs—a substantial figure, since this is the largest part of the cost.

These savings are predicated, of course, on using modern types of trough systems. Older types require nuts, bolts and washers



Power and control cables fed to switchgear are neat and readily accessible for additions or changes, in spite of cable concentrated at the control center. Clear space below troughs in this installation is more than 9 feet. (Cover on trough where it passes through the wall has been removed for this photograph).

for each connection. For example, the old Cope system required as many as 50 different pieces for each connection of 24" trough. The new Cope 70,000 series uses a pin-type coupling that secures the connection like a non-movable hinge. The fittings are welded to the trough itself, so that two pins and a bottom plate are the only pieces needed for a connection. This elimination of 47 pieces further reduces the time needed for installation, and should effect

further savings.

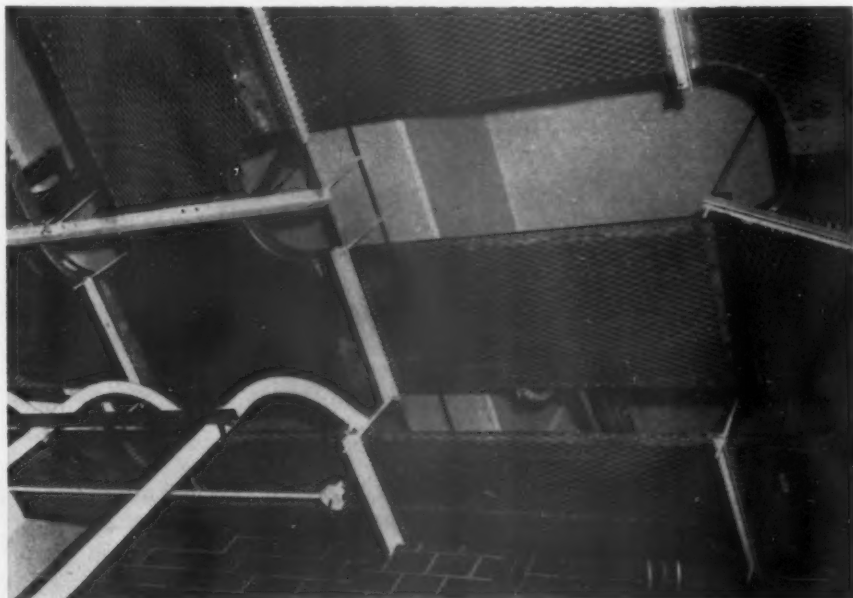
Materials savings are also significant. A 10-foot run of 24" trough weighs 520 lbs. less than 10 feet of the equivalent capacity of 4" conduit. It is apparent that there is a saving of more than a ton of steel in every 40 feet of cable support when using trough.

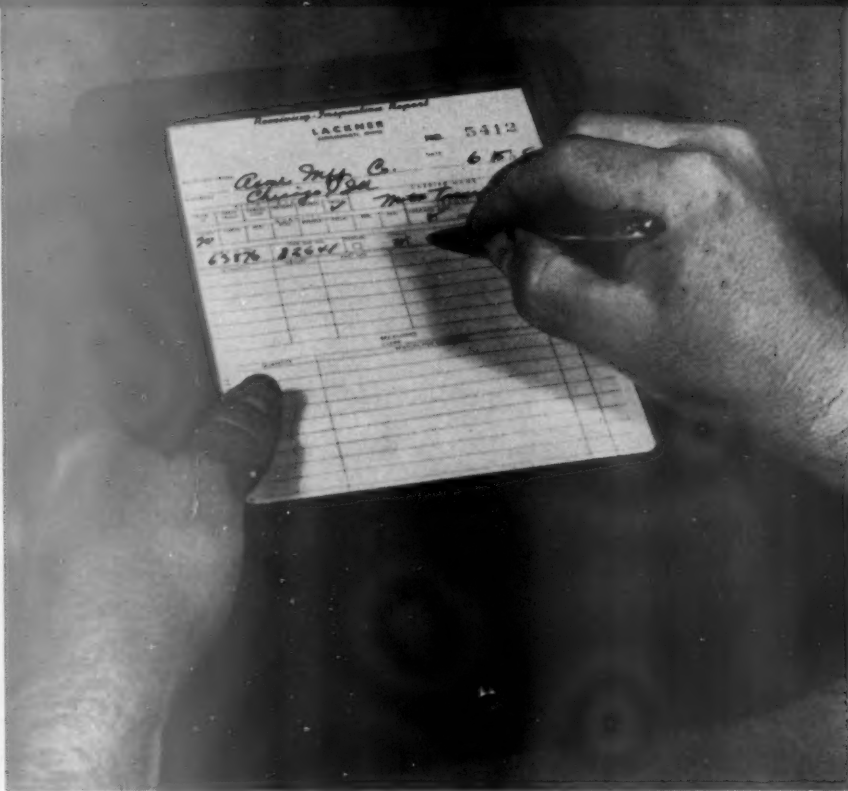
### Electrical Considerations

The electrical properties of cable in trough are superior to those of cable in conduit. We allow a free air rating if no more than two layers of cable are laid in expanded metal trough. The rating in conduit is approximately .65 if only four cables are used, even less if the number is greater. This means an increase of 20% in current carrying capacity for the same cable. For similar current capacity, smaller cable is permissible in trough.

If the trough is considered a raceway instead of a support, the electrical properties of the trough itself must be considered. Tests seem to show conclusively that the trough is a sufficiently good conductor to activate the circuit protective devices on ground fault. It is conceivable that some trough connections might not be electrically tight, but we have not

Variety of fittings available for expanded metal cable trough permit great flexibility even in crowded areas.





# Combination Form Saves Time and Work, Improves Procedures

By George E. Toles

**BY COMBINING** two separate padded forms into a single continuous six-part form written in a portable register, the Lackner Company of Cincinnati, Ohio, has developed a complete "one writing" control and record system for their receiving and inspection operations. This company, established 50 years ago, is a leading manufacturer of advertising signs and displays of all kinds.

In the past, a three-part receiving report and a three-part inspection report were used—each

written separately, in the receiving and stores departments respectively. The duplication of information on the two forms, the time-consuming task of insertion and removal of carbons in the padded form, and the possibility of transcription errors or discrepancies with the separate writing of the related records, made this method far from ideal. A complete review of procedures, made with the assistance of Moore Business Forms, Inc., resulted in the present improved system.

The combination Receiving-Inspection Report form eliminates the duplication of entries identifying incoming material, provides complete information regarding each shipment on a single piece of paper, reduces routing and handling of forms by half, and simplifies the correlation of data in purchasing and accounting.

The receiving clerk gets the shipment at the receiving dock and processes the freight papers, identifies the shipment and examines it for external damage. He locates the packing list in the shipping containers, determines contents of the shipment, and pulls the purchase order copy and checks quantity and description against the requirements listed.

He then fills in the receiving information in the upper section of the combination form in the convenient register, using a ball-point pen, thus assuring that all six copies will be clear and legible. On damage shipments, the extent of the apparent damage on receipt is described in his report. He signs his section of the report on the designated line and removes the form from the register.

The six copies of the form, which are pre-numbered, are on different colors of paper for easy identification. The distribution is as follows:

Part 1 (white), Part 3 (blue), and Part 4 (salmon) are stapled to the shipping document and placed with the shipment, which is delivered to the stores department.

Part 2 (green) is sent directly to the cost accounting department.

Part 5 (pink) is filed numerically in the receiving department's own record file.

Part 6 (yellow) is sent to the production department as notification of receipt of material.

Stores receives the shipment with the three report copies and shipping documents. Here the shipment is examined for quality, and quantity is checked by hand or weight count. Any discrepancies are recorded on all three of these copies, and the responsible employees sign the form.

The stores department retains the blue copy in its own numeri-



cal file. The white copy goes to Purchasing, with the shipping documents attached. If no rejects are involved, the salmon copy is also stapled to the white copy and goes to Purchasing.

If any part of the shipment is rejected, the salmon copy is held with the rejects for return to the vendor. All accepted material is then stocked in the designated stores area.

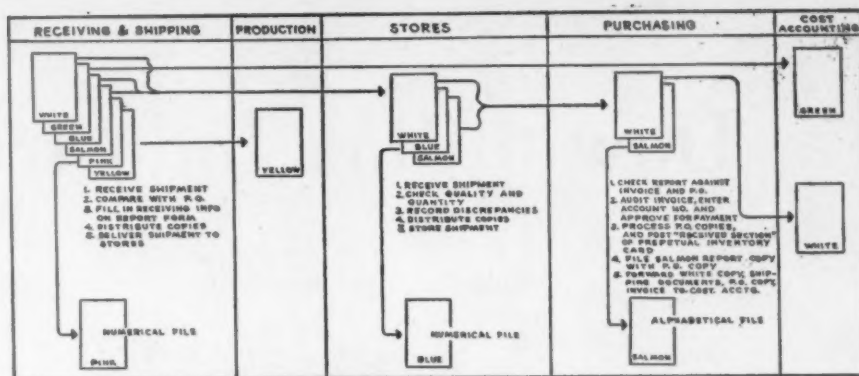
Purchasing receives the two copies of the report, with the shipping documents, and files the papers in a binder alphabetically. After the report is checked against the invoice and the purchase order copy, the invoice is audited, the account number is entered, and the invoice is approved for payment. The purchase order copies are processed and material received is posted to the perpetual inventory cards.

The salmon copy of the report is stapled to the purchase order file copy and filed alphabetically. The white copy of the report, with shipping documents attached, and the completed purchase order copy are stapled to the invoice and forwarded to Cost Accounting.

This "normal" procedure is readily adaptable to all types of incoming shipments, with minor variations for special situations.

For example, in handling shipments received for stores purchases of instrument division material, as distinguished from commercial material, the green copy remains with the white, blue and salmon copies when the shipment is sent to Stores, instead of going direct to Cost Accounting. Stores holds the white copy and sends the others with the shipment to a Receiving-Inspection department. Here the material is inspected, the report completed, and the green copy is filed in the vendor's folder. The blue and salmon copies are sent back to Stores with the accepted or rejected material, for usual handling thereafter.

For other purchases of instruments or commercial material, where material is delivered direct to an indicated department, instead of to Stores, the report copies go to that department for processing. The recipient files his



Flow chart showing distribution and routing of report copies.

The form itself has two sections, on which receiving and inspection data are accumulated. There is no duplication of entries, and information comes to interested departments and final filing on a single sheet for each shipment.

copy in a numerical file and sends the white and salmon copies to the purchasing department as before.

If purchases of this sort are delivered through the stores department (without being placed in stock), the same procedure is used except that Stores holds the shipment only long enough to notify the person or department indicated that the shipment has been received and can be picked up.

In summary, the portable register equipment and method makes for cleaner, faster handling of reports in the receiving department; paperwork on the part of receiving and inspection personnel is kept to a minimum, conserving valuable time; the "one writing" procedure eliminates errors of transcription; and the consecutively prenumbered forms, with consolidated information on each shipment, provides complete records control.

# How to Buy Industrial Rolls

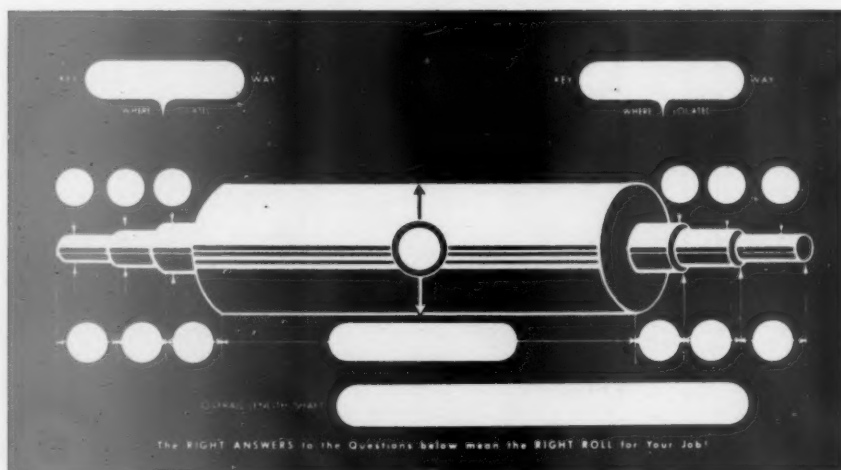
...for better operation

...for longer service

...for lower cost

By David A. Kuniholm

Roaney Hunt Machine Co., Orange, Mass.



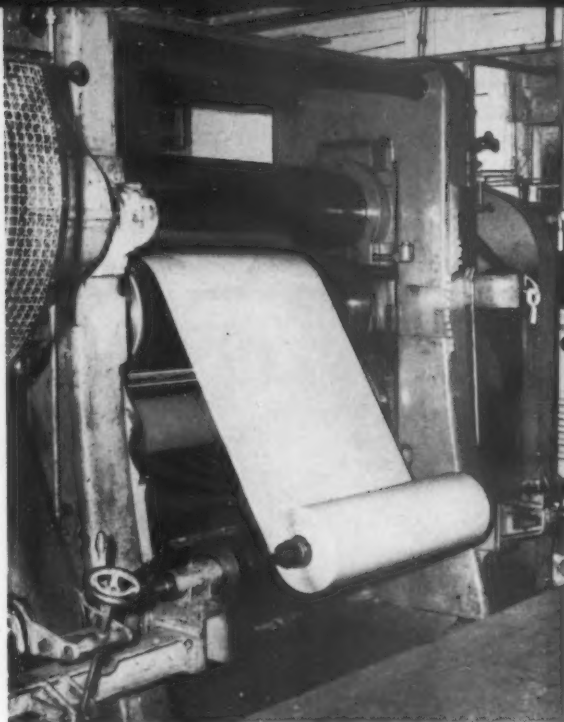
1. HOW MANY ROLLS? \_\_\_\_\_
2. ☐ METAL \_\_\_\_\_  
KIND OF METAL \_\_\_\_\_
3. ☐ WOOD \_\_\_\_\_
4. ☐ NATURAL RUBBER \_\_\_\_\_  
☐ SYNTHETIC RUBBER \_\_\_\_\_  
HARDNESS \_\_\_\_\_
5. FOR WHAT KIND OF MACHINE ... \_\_\_\_\_
6. ☐ REPLACEMENT ☐ NEW MACHINE
7. ☐ WET SERVICE ☐ DRY SERVICE

8. ☐ IDLER ROLLS ☐ DRIVE ROLLS
9. ROLL SPEED \_\_\_\_\_
10. ☐ LIGHT LOAD ☐ MEDIUM ☐ HEAVY
11. UNUSUAL CONDITIONS (IF ANY).  
TEMPERATURE RANGE \_\_\_\_\_  
CHEMICALS \_\_\_\_\_  
SURFACE REQUIREMENTS \_\_\_\_\_
12. CAN DIFFERENT ROLL DIA. BE USED? \_\_\_\_\_
13. ANY TROUBLE FROM THESE ROLLS IN THE PAST \_\_\_\_\_

Summary of dimensional and service information is the basis for providing the most suitable and most economical roll for a given purpose.

IN THE MANUFACTURE of paper, textiles, coated fabrics, plastics and leather products, to name but a few fields, various types of metal, rubber, and wood rolls play a vital part. Wherever material must pass over rolls, the individual roll items and replacements frequently represent a large—if not the largest—portion of the cost of the machinery. A clear understanding between the user and the supplier of the roll is a “must” if the buyer is to obtain the most suitable roll at lowest cost.

The purchase of exact duplicate rolls for existing machinery, procured from the original supplier, does not present any problem if they have performed satisfactorily in the past. However, the purchase of rolls for new installations, or for alterations to existing equipment, or for replacements of low performance rolls, offers the purchasing agent an opportunity to improve performance and to save substantial amounts of money for his company—if he has complete information from his colleagues in technical, shop, and maintenance departments.



Industrial rolls of several varieties are used in this textile operation. Long staple cotton fabric for tracing and photographic reproduction cloth is calendered between a stainless steel top roll, a heated cylinder, and a rubber covered roll.

Maintenance is important. On this finishing mangle used in the screen printing process, rolls must be flushed clean of resins, starches, gums, and other viscous compounds that tend to build up on the surface, while these are still in a soluble state. Attempts to remove adhesions of this sort after they have set can seriously injure the roll.



Purchasing agents are in the position of liaison between their maintenance or engineering divisions and the supplier. Maintenance men and engineers, being so close to the application or new design for which the roll is intended, are inclined to minimize the importance of explanatory details. They know the answers to most of the questions related to the use of the roll, but they are so close to the situation and take so much for granted that, in passing along information to the buyer, they often neglect to give anything but the barest dimensional details. That handicaps procurement.

For this reason, we favor the use of a dimension and data sheet that spells out the requirement in complete detail, as indicated by the form herewith. I should like to explain here the purpose behind each of the questions, and how the correct answers insure both the best roll for the job and the lowest cost roll.

**1. How Many?** Industrial rolls do not come off the shelf as a standard item. They are tailor-made for the individual job. In manufacturing a single roll, all

machine setups must be absorbed in the cost of the one roll. Where a greater number of rolls are required, the cost of each setup is spread over the entire lot. The setup charges vary according to the complexity of the roll. This factor should receive the buyer's close attention.

Further, many rolls require special materials not normally stocked by the roll supplier but procured for a specific job. Quantity discounts are available on many raw materials, and this can be a substantial factor in roll cost. For instance, a single piece of seamless steel tube can cost more than twice as much as the same size of tube if purchased in a quantity of 600 pounds or more. The price of a roll will vary accordingly.

**2. Metal?** Different mills use different metal rolls for the same purpose. The maintenance man or engineer knows whether the material he has in mind is iron, brass, steel, or aluminum. But if the roll manufacturer is left to guess, he may furnish exactly what you don't want.

**3. Wood?** Basically, the roll manufacturer wants to know

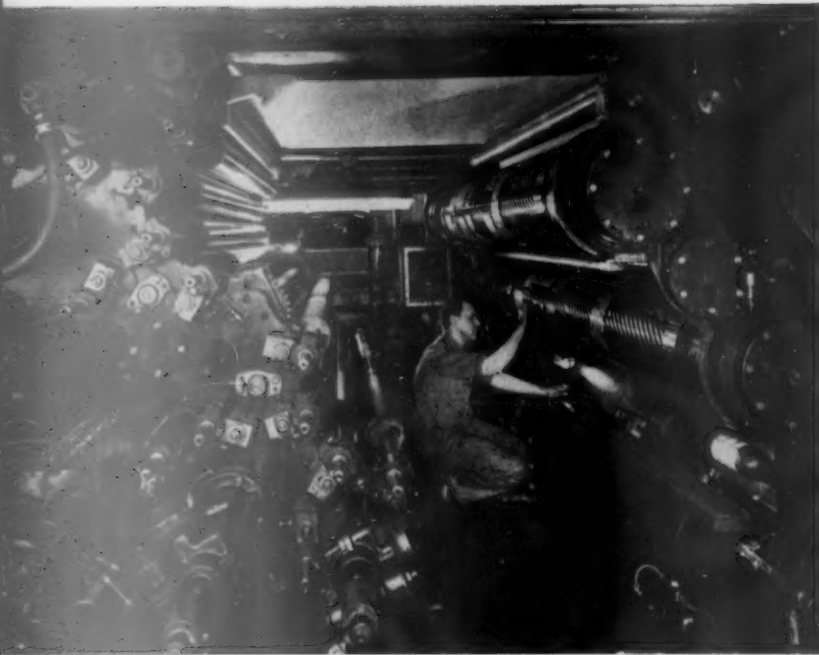
merely whether a wood roll is desired in preference to metal or rubber. Subsequent questions enable him to determine the proper kind of wood for the job.

**4. Rubber?** In the case of a rubber covered roll, a preference for natural rubber or a synthetic must be indicated. Also, the hardness or density must be defined. Previous usage often determines the answers to these questions. While a roll specialist can make intelligent recommendations in this regard, there is no substitute for the knowledge of what has worked satisfactorily in the past.

Synthetic rubbers such as Neoprene, Hycar and Hypalon are more costly than natural rubber, but are well worth the extra cost when used under conditions where natural rubber will not stand up.

Where the hardness or density of rubber covering is already known, specifying it helps your supplier to know the proper thickness of covering. For instance, with an 0-5 plastometer hard covering, it would be a needless waste of money to purchase a roll with  $\frac{3}{4}$ " thickness when  $\frac{1}{4}$ " thickness is ample.





Modern rotogravure printing press.



Laminating acetate to aluminum foil.

#### 5. For What Kind of Machine?

No roll supplier is familiar with every type of machine made, but a description or name of the machine is in many cases a valuable clue in knowing the general type of roll to be supplied. All too often, for imagined purposes of "commercial security", users try to veil the machine or process for which the rolls are to be used. However, a full understanding of the problem is essential to performing any task satisfactorily. The roll specialist is not in the least interested in duplicating your process. Further, this exchange of information is a two-way street. A proper understanding of your problem permits the roll supplier to draw upon his past experience to your advantage. He has furnished literally thousands of rolls, many of which may have been for the same or similar conditions.

**6. For Replacement or for New Machine?** The answer to this question frequently permits the roll supplier to let his imagination work, which can be to your advantage. Most replacement rolls do not permit much latitude for changing of specifications. On the other hand, a new machine in the

design stage can often be altered to include various changes in the original specifications. For example, it might be quite logical for the roll supplier to suggest a change in bearing size to eliminate shaft bending or breakage.

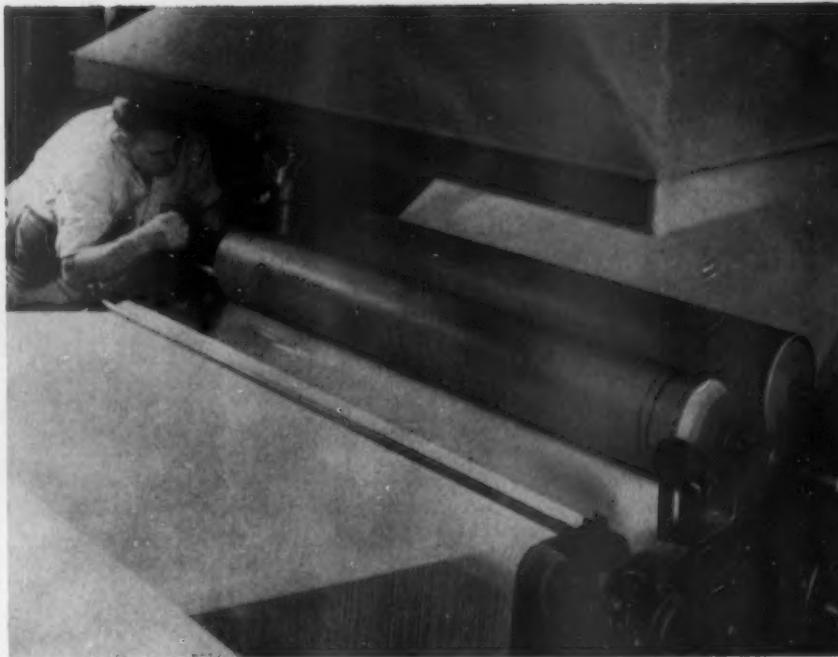
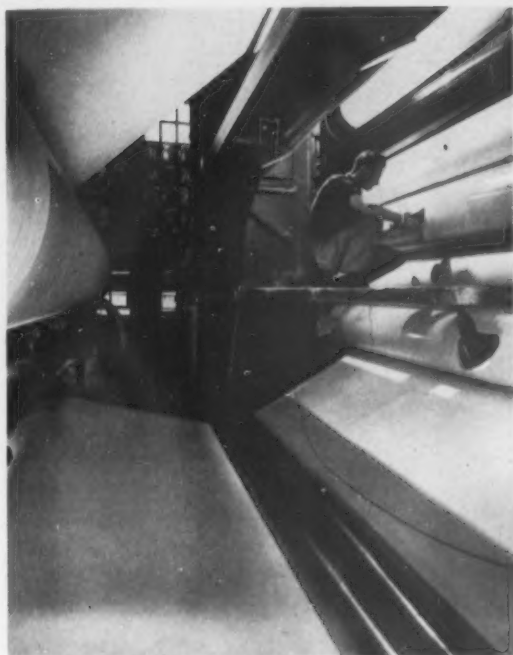
**7. For Wet or Dry Service?** A wet service roll requires a different construction than one for dry service. In the case of a corrosion resistant metal it becomes necessary to consider corrosion resistant ends and/or shafts. In the case of rubber covered rolls, wet service conditions would call for rubber covering not only on the surface but also on ends and hubs. In the case of wood rolls, dry service conditions would dictate the use of kiln-dried stock, whereas wet service conditions would permit the use of less costly air-seasoned stock.

**8. Idler or Drive Rolls?** Knowing that a roll is to be a drive or driven roll tells the supplier that the diameter should not be changed, in order not to disturb existing ratios and gears, sprockets or sheaves. On the other hand, a simple idler roll might be changed to a different diameter at a substantial saving in cost.

**9. Speed of Rolls?** The answer to this question is becoming in-

creasingly important every day. Continually higher machine speeds often demand that rolls should be not only statically balanced, but dynamically balanced to prevent dangerous vibration in the machine and bearings.

**10. For Light, Medium, or Heavy Loads?** This question is one of the most difficult to answer because of the many variables and other extenuating circumstances encountered in production. But to the roll supplier it is one of the most important considerations. We have virtually given up trying to obtain a precise answer on "load" and have resorted to the general terms "light, medium, or heavy". Admittedly, this is not too good. It would be hard to get different people to agree on what might be termed a light, medium, or heavy load. A heavy load in one industry is a light load in another process. It is valuable to the roll supplier to have the best possible answer so that the roll can be designed to be of proper strength and rigidity, without excessive deflection that would be harmful to the process. It determines the size and the material of which the shaft extensions shall be made.



Applying size to cotton warp yarns.

Supercalender stack in a paper mill.

**11. What, If Any, Unusual Conditions?** This generally involves three considerations.

**a. Temperature Range?** The importance of this factor shows up in many ways. An aluminum roll with cast iron end heads would operate satisfactorily at room temperature. The same roll, if operated at 250° or 300° would probably fall apart because of the difference in expansion rate between the aluminum tube and the iron head. A steel roll used in a dryer might fail for the same reason unless the heads were of the same material as the tube, and welded to it. A high temperature condition might utterly ruin a rubber covering which, if all temperature conditions were known in advance, might have a special compound applied to the roll, that would give good service at the higher temperature.

**b. Chemicals?** The chemicals that will come in contact with the roll must be known to insure that the roll material will have the proper corrosion resistance. Where trade names of chemicals are used, except in the case of very common ones, try to obtain and indicate the chemical composition. This information is probably known to your technical

men, and may not be known to your supplier. He will have to find out what the compound is composed of, and this causes delay.

**c. Surface Requirements.** The precise answer to this question can affect the ultimate price of the roll more than any other single factor. A lathe finished metal roll might require twice the labor involved in a metal roll that was not machined. A polished and ground roll might take four times the labor. The degree of concentricity desired between the surface of the roll and journals will have an important bearing on the price because, in addition to added labor, a close concentricity balance might require an entirely different class of material for the body of the roll.

Recently we received an inquiry for some small stainless steel tube rolls, specified with .003" concentricity. The customer questioned our price of \$187 per roll when similar rolls previously purchased cost about \$100 each. In checking back on the previous order, we found that we had furnished them of 1/8" wall thickness polished surface tube; they had a runout of 1/32" maximum. However, to insure the concentricity

tolerance of .003" it was necessary to go to a heavy walled stainless tube which would have sufficient rigidity to permit machining. This in itself represented a large increase in material cost. Added to this was the extra machining and polishing cost, which nearly doubled the price. When this was explained, the customer found it more expedient to use the more economical roll, made to the wider tolerance.

We don't advocate decreasing the tolerance allowances just to lower the cost of a roll. However, in this instance, if the wide variation in costs prompted the user to reappraise the tolerance requirements, and if the application could properly utilize rolls with the wider tolerances, the best purpose was served.

**12. Can Different Diameter Roll Be Used?** A "yes" answer to this question can result in substantial savings also, and the range of allowable diameters should be specified if possible. For example, suppose that a 6 3/4" finished surface steel roll was specified on the dimension sheet. Such a roll would require special tube at a premium price. If the requirements of the job might be served just as well with a 6 1/2" diameter



Rolls eventually wear out. For economy and long service life, the purchasing agent should see to it that proper specifications are obtained for the replacement roll.



roll, one could use 6 $\frac{3}{8}$ " diameter steel pipe in the rough—which is much more economical.

**13. Any Trouble from these Rolls in the Past?** Any roll supplier likes to feel that he is in a position to accept challenging problems, even if it means taking on some troubles. That's where his knowhow and experience can be put to beneficial use. But life is full of surprises for all of us, and tackling a roll problem is no

different than in playing bridge, where "one peek is worth two finesses." Deep rooted troubles can best be corrected by laying them out for inspection.

So all of these questions about a simple roll have a purpose. They are important because even a complete engineering drawing of a roll is not always the final or happy answer to supplying adequate information. The complete engineering is fine where no de-

viations are allowable. However, most of us aren't built that way; instead, we welcome and thrive amid change. Your roll supplier welcomes the opportunity to modify, alter, or innovate to insure your procurement of the best rolls to suit your needs at the lowest cost. He can do so if you, as purchasing agent, will pave the way for the flow of pertinent information between your technical men and the supplier.



# Purchasing Helps Spark

## Small Company's Growth

*It takes imagination, knowhow, and persistence  
to establish supply sources for a new enterprise*

**By George R. Schollhamer**

Director of Manufacturing, Rudd-Melikian, Inc., Hatboro, Penna.

SOME PEOPLE don't think of a purchasing agent as a creative part of a business organization. We know better. Without the creativeness of our purchasing department, our progress would have been hampered.

Soon after the close of World War II, our company was organized to make automatic hot coffee dispensers. Some months later, as we were starting to get into production, a purchasing agent was hired. Pete Kelly had a good background of purchasing experience with a bus and auto body manufacturer and with the government. Also, he had a lively, imaginative approach to the job. He needed both.

At the time Mr. Kelly joined us, the general idea of a hot coffee dispenser was brand new. So when "Pete" started to try locating component parts he found that, while about everything was available for cold drink dispensers, practically none of the parts could be used satisfactorily where heat was applied.

We were small and could not afford special designs and dies for many of our needs. So Pete Kelly tried to locate products that could be adapted to our use.

One of the first items we needed was a stainless steel commodity container. In his search for such a product, Pete finally wound up

in a surgical supply house, where he bought some surgical gauge and cotton containers. Based on previous discussions with engineering and manufacturing men, he thought one of them might serve the purpose. Engineering looked over Pete's samples and worked up an adaptation of one of them that would do the job. Pete located the manufacturer of surgical jars, and eventually this firm became our supplier of the containers.

During this period, our purchasing department consisted solely of Mr. Kelly. So he was a very busy man. We were starting from scratch. To develop sources, he spent a lot more time going from supplier to supplier than he did at his desk.

Getting a source for our dispensing valve was a typical problem. Our hot coffee dispensers use an electrically operated dispensing valve which delivers the required amount of each commod-

**Purchasing is definitely "a member of the team" at Rudd-Melikian. Here P.A. Pete Kelly (center) talks over requirements with Director of Manufacturing George Schollhamer and Chief Engineer Leonard Kownurko.**



ity into a paper or plastic cup to make the hot drink selected by the customer. A similar valve was in use on cold drink dispensers, but we found that it would neither stand up nor remain sanitary under high temperatures. Engineering called on the purchasing agent to find a solution. Mr. Kelly contacted a large number of valve manufacturers, explained the problem, and interested them in designing a valve that would meet requirements.

In the course of this search, he brought back information he had gleaned from his contacts and passed it on to our engineering department. As a result, we were able to come up with a satisfactory valve design ahead of any of the manufacturers.

But the problem wasn't solved yet. Valves had to be built for test, and at that time manufacturers were so busy that they weren't interested in new and untried products. So Pete took to the road again, calling on one manufacturer after another. Finally he found one who was both able and willing to make a valve that would operate under both high and low temperatures. This type was needed since the com-

pany had decided to build a machine that could serve hot coffee, hot chocolate, and three cold carbonated drinks.

There were numerous other items that Mr. Kelly lined up in the same manner — including molded power cables, feed mechanisms, cup drops, carbonators, etc. It was striking proof that the purchasing agent can be much more than "a relayer of orders".

### Keeping Costs Down

As the company has grown, the purchasing job has grown too. In our early years, purchases totalled only about \$200,000 annually. Now they run to about \$3 million. Purchasing is no longer a one-man operation. Mr. Kelly is assisted by a buyer and a full-time clerk.

Just as his experience was invaluable in lining up sources of supply in the company's infancy, it is very useful today in a different way. He now has time to devote to such money-saving projects as standardization. As a simple example, screws were originally bought for each job run in the shop, as specified for each particular model. Now they are bought three months ahead for

each model the company makes, and considerable savings have been effected by standardizing sizes and buying in bulk.

Formerly, the company used different types of valves and relays for practically every different type of machine. In the early stages of machine development, there just wasn't enough time to carry out a standardization program. Now, valves and relays are pretty completely standardized. And in many cases—wherever possible—we are using standard stock items. Thus, if our deliveries from manufacturers are delayed for any reason, it is still possible to get stock at a higher price through a distributor.

Another technique Mr. Kelly uses for keeping costs down is combining orders. He went to a company that makes valves for washing machines. By combining orders and fitting them into the manufacturer's schedule, he received additional discounts.

Thus, purchasing has been a real creative factor in our progress, making a substantial contribution toward the growth of a company that didn't even exist at the end of World War II into the largest in its field.

## Certified Mailing

By A. M. Dewey

Purchasing Agent  
Denison University, Granville, Ohio

| RECEIPT FOR CERTIFIED MAIL—15¢ |  | POSTMARK<br>OR DATE |
|--------------------------------|--|---------------------|
| No 241400                      | SENT TO  |                     |
|                                | STREET AND NO.   |                     |
|                                | CITY AND STATE   |                     |
|                                | If you want a return receipt, check which <input type="checkbox"/> 7¢ shows to whom and when delivered <input type="checkbox"/> 31¢ shows to whom, when, and address where delivered |                     |
| FD-3800<br>Apr. 1955           |  |                     |

A PREVIOUS ARTICLE (April 1953) described the use of Post Office form 3817 as evidence that a letter has been mailed. Such assurance or proof is frequently vital in business transactions. The conventional method is the use of registered mail.

Now the Post Office has come out with another method, called Certified Mailing. This service provides a postmarked receipt to the sender (Form 3800) and a

record of delivery which is filed at the Post Office.

The fee, in addition to regular first class postage, is 15¢, a saving of 25¢ per letter in comparison to registered mail. Since the service is limited to mail of no real value, there is no insurance provision for loss or damage. Return receipt and restricted delivery services are available for an additional fee, the same as for registered mail.

Certified mail can be sent by air mail and special delivery if desired. It is handled in transit like first class mail. Delivery rules for the Post Office at destination are the same as for registered mail.

For those who are interested in looking into this service, complete details can be obtained from your local Post Office. Or, refer to Postal Laws and Regulations, Part 168.

The objectives of college courses in purchasing must be clarified before the teaching can be fully effective.

THE National Association of Purchasing Agents, through its Committee on Schools and Colleges, has done an excellent job in promoting the teaching of purchasing. Success has been achieved in getting the course listed among the offerings of an increasing number of schools. But many problems remain, and the continued interest and aid of the Association will be necessary if worthwhile results are to be realized.

Getting a school to include purchasing as a part of its curriculum is but a starting point. Equally important are the questions:

- . . . Where should the course be taught?
- . . . How should it be taught?
- . . . By whom should it be taught?

#### **Where Does the Purchasing Course Belong?**

The problem of determining where, in the curriculum, the course should be taught is a difficult one. Universities are so organized that practically all students are given a broad training in the liberal arts for the first two years. After the first two years students tend to restrict their work largely to a selected area of specialization e.g., a science, business, engineering, journalism, etc. The organization is such that once a student decides upon a specialized area, he finds it all but impossible to pursue courses in other areas.

This poses a very difficult problem for the student hoping to prepare himself for a career in purchasing. He finds that the prospective purchasing agent needs a combination of skills, and to get such training would entail "cutting across" several areas of study. In a majority of cases, he finds this is not possible.

A well known Director of Purchases, in correspondence with the writer, believes that the following division of courses would be ideal for the student interested in a purchasing career:

|                               |     |
|-------------------------------|-----|
| Mathematics and science ..... | 25% |
| Engineering .....             | 15% |
| Liberal arts .....            | 30% |
| Business subjects .....       | 30% |

Many would agree with this recommendation, but one would be hard pressed to find a reputable school that would permit the student to diversify his training in this manner.

As a result of this situation, the purchasing department desiring to hire a man with some knowledge of engineering must look to the engi-

# Teaching Industrial Purchasing

By Dwight Gentry

Associate Professor of Marketing  
University of Maryland

neering graduate. Conversely, if they consider business training of primary importance they must seek the business graduate. It is almost impossible to find an engineering student who has had any business training or to find a business student who has had engineering courses.

A partial solution to the problem might be the encouragement of a purchasing course in the engineering school. But this entails a problem in that the purchasing course in itself is primarily a business course, and few teachers of engineering would be qualified or interested in teaching it. A possible solution might be to have the business school "loan" an instructor to the engineering faculty to teach purchasing. There seems to be even less possibility for the business student to be able to take engineering courses.

As the matter now stands, it is reasonable to assume that most of the courses now offered are being taught in the business area. Very few engineers are taking the course, and ever fewer business students are getting training in engineering or the sciences.

If the objective of the purchasing profession in encouraging the teaching of purchasing is to develop an interest in purchasing as a career, an effort should be made to get together with the universities in determining *where* the course should be taught and to *whom*.

The problem of *how* to present and teach the purchasing course is also a difficult one.

The course is comparatively difficult to pre-



sent to the college student. When he takes courses in advertising or retailing he is dealing with something that he has at least encountered from the consumer's side of the counter. Not so with industrial purchasing. He is usually very much unaware of the significance of purchasing, and the teacher's first job is to convince him that here is an area deserving further study. (When the course is offered as an evening school course, and taught to people employed in some aspect of purchasing or familiar with purchasing through other business experience, the teaching problem is less difficult.) Furthermore, the business student is often discouraged early in the course when he learns that many purchasing jobs demand a background in engineering or the sciences.

### **How Should the Course Be Presented?**

It is the opinion of the writer that in teaching purchasing to business students, one should not attempt to present the course as preparation for a specific job—purchasing. It has been found that the following objectives, when diligently pursued, will lead to maximum accomplishment in the purchasing course:

1. **Familiarize** the student with the important role played by purchasing in modern industry. Develop in him an appreciation of the purchasing activity.
2. **Impress** upon the student that his business education would be incomplete without a knowledge of the area of purchasing. Show him how he will be brought into contact with purchasing through many areas of management.
3. **Point out** to the student, as the course develops, that many types of purchasing do not require technical training in engineering or the sciences, and in many others the technical skill develops through experience.

Actually, these objectives demand that a purchasing course be taught from a broad management viewpoint rather than from the more specific "how to" approach. Experience in teaching the course reveals a considerable student resistance to the teaching of procedures. It is interesting to note that certain of the topics usually covered in a purchasing course prove stimulating to students, while others require much more ingenuity on the part of the teacher if interest is to be maintained. On the basis of the writer's experience, student reaction to various topics might be classified as follows:

#### *Keen Interest*

- a. Pricing and price negotiations
- b. Legal aspects of purchasing
- c. Ethical considerations
- d. Reciprocal purchasing
- e. Personal purchases

- f. Personnel selection and training
- g. Value analysis

#### *Milder Interest*

- a. Responsibility for procurement
- b. Organization for purchasing
- c. Determining quantity to purchase
- d. Specifications
- e. Procurement of capital equipment

#### *Slight Interest*

- a. Procedures and forms
- b. Inventory controls
- c. Surplus disposal
- d. Budgeting
- e. Evaluation of purchasing performance
- f. Reports

This does not imply that the above listing in any way represents the relative value of the many topics. It does indicate that certain topics are more difficult to present than others. While some students find a discussion of budgeting to be boring, their interest can be aroused through impressing them with the importance of this activity. Purchasing procedure is often very difficult to present. The student reasons (and quite correctly) that procedures are often not standardized, and even if they were they cannot be mastered from a textbook. I believe most teachers of purchasing would agree that the subject is not well suited to the "shop approach" when taught to college students. If the course is taught to people already employed in the field, more emphasis on procedures might well be managed.

When the purchasing course is offered in a school of business, or business department, it is usually taught by someone trained in marketing or industrial management. If purchasing is offered as an evening course, someone who is employed in the field might be obtained to teach the course. Obviously, someone currently employed in purchasing would be in a better position to teach procedures and to emphasize the "how to" approach.

It would be well for those interested in the college courses in purchasing to devote thought as to what the course should achieve. Should the goal of the course be to establish the importance of purchasing, and to familiarize the student with the problems and principles of purchasing in general terms? Or, should the goal be to acquaint the student with procedures and lessen the time required to train him on the job?

It is the purpose of this brief article to call to the attention of purchasing men some of the problems encountered in teaching the subject, and to emphasize the need for continued interest on the part of the purchasing fraternity. Getting the purchasing course into a college catalog in itself means little. Getting the information presented to the right people in the right manner can be of great value to all industry.

Added efficiency for production operations. Here, a thin strip of tape holds rivets in position until they are permanently fixed.

# TAPE BUYING KNOWHOW CUTS COSTS



*Many types of industrial tapes are available for a wide variety of useful applications in production, assembly and shipping operations*

**By B. M. Austin**

Industrial Products Director, Permacel Tape Corporation, New Brunswick, N. J.

**T**O A GREATER EXTENT than many businessmen realize, modern industry is held together by tape (not necessarily of the red variety). The use of self-sticking (pressure sensitive) tapes extends from the office desk out through production departments and into shipping. Tapes are used for bundling loose parts, sealing packages of noodles, protecting machined surfaces from damage during fabrication, insulating armature windings, masking surfaces to be painted—

literally thousands of important jobs.

These varied uses suggest that the purchasing agent, whatever his company's business may be, can benefit—and benefit his company—from knowledge of the basic varieties of tapes and their countless applications. Chances are that he is buying considerable quantities of tape right now, for many uses. In order to select the best tape for the job, he should be familiar with these versatile

new materials of industry.

### **Three Basic Types**

Tapes fall into three broad classes, each with scores of subdivisions. These are:

- Pressure sensitive;
- Solvent activated;
- Heat activated.

Pressure sensitive tapes are far and away the largest category. Depending on the application, they are made of paper, cloth, cellophane, acetate fiber, even metal foil.

# PRESSURE SENSITIVE TAPE - GENERAL VALUE RANGES AND USES

| CLASS OF TAPE       | BACKING (Note 1)     | COLOR                 | THICKNESS (mils) | TENSILE #/in. | ELONGATION (per cent) | TYPE ADHESIVE (Note 2) | ADHESIVE STRENGTH | WATER-PROOFNESS | PRINT-ABLE | ELEC. GRADES AVAILABLE | TEMPERATURE RANGE | SPECIAL PROPERTIES  | GENERAL USES  |
|---------------------|----------------------|-----------------------|------------------|---------------|-----------------------|------------------------|-------------------|-----------------|------------|------------------------|-------------------|---|---|
| I Film & Plastic    | Cello                | Clear & Colored       | 2.5-3.5          | 22-40         | 8-20                  | Regular                | Moderate          | Poor            | All        | No                     | Poor              | —   | Packaging, mending, sealing, decorating                 |
|                     | Acetate              | Clear                 | 2.5-3.5          | 20-35         | 10-35                 | Regular                | High              | Good            | Some       | Yes                    | Poor              | —   | Splicing, protecting                                    |
|                     | Mylar®               | Clear & Colored       | 2-3              | 15-35         | 50-250                | Regular; H. C.         | High              | Excellent       | Some       | Yes                    | Good              | Abrasion and chemical resistant                                   | Decorating  |
|                     | Vinyl                | Clear & Colored       | 3-20             | 10-65         | 100-300               | Regular                | Moderate          | Excellent       | Some       | Yes                    | Fair              | Abrasion and chemical resistant                                   | Edging, packaging, insulating                           |
|                     | Polyethylene Teflon® | Black & Grey          | 9-15             | 15-25         | 100-400               | Regular S.             | Moderate          | Excellent       | Some       | Yes                    | Fair              | Low temp. pliability  | Insulating  |
| II Paper Masking    |                      |                       | 2-10             | 3-60          | 100-500               |                        | Low               | Excellent       | None       | Yes                    | Excellent         | Highly abrasion and chemical resistant                            | Insulating  |
|                     | Crepe                | Tan & Black           | 7-11             | 15-30         | 6-20                  | Regular; H. C.         | Mod. to High      | Fair            | None       | Yes                    | Fair              | Non-staining, conformable   | Masking, bundling, packaging                            |
|                     | Flexible Flat        | Tan                   | 6-8              | 18-25         | 5-15                  | Regular                | Mod. to High      | Fair            | None       | No                     | Fair              | Non-staining, curvable  | Masking, splicing                                       |
| III Paper Packaging | Flat                 | Tan & Black           | 6-8              | 40-65         | 3-8                   | Regular; H. C.         | Mod. to High      | Fair            | None       | Yes                    | Fair              | Non-staining  | Masking, packaging                                      |
|                     | Crepe                | Tan & Colored         | 7-11             | 15-30         | 6-20                  | Regular; H. C.         | Mod. to High      | Fair            | Some       | No                     | Poor              | Good flexibility for automatic packaging                          | Labeling, holding                                       |
|                     | Flat                 | Tan & Colored         | 6-8              | 40-65         | 3-8                   | Regular; H. C.         | Mod. to High      | Fair            | All        | No                     | Poor              | —   | Packaging, labeling, decorating                         |
| IV Paper Protective | Flat                 | Tan                   | 5-10             | 15-40         | 4-10                  | Regular                | Low               | Fair            | All        | No                     | Fair              | —   | Protecting  |
| V Cloth             | Plain                | White & Colored       | 10-15            | 40-60         | 5-10                  | Reg.; H. C.; S         | Moderate          | Good            | All        | Yes                    | Fair to Exc.      | Cotton, rayon & glass cloths available                            | Packaging, reinforcing, protecting                      |
|                     | Coated               | White & Colored       | 10-15            | 45-75         | 5-10                  | Reg.; H. C.; S         | Moderate          | Excellent       | All        | No                     | Fair to Exc.      | Vinyl, nitrocellulose, silicone & polyethylene coatings available | Packaging, sealing                                      |
| VI Metal            | Aluminum Lead        | Aluminum Lead         | 4-6              | 25-35         | 3-7                   | Regular; H. C. Regular | Moderate          | Excellent       | All        | No                     | Excellent         | Electrically conductive   | Shielding, sealing, Masking & insulating (electrolysis) |
|                     |                      |                       | 5-6              | 15-20         | 14-17                 |                        | Moderate          | Excellent       | None       | No                     | Good              | Highly malleable  |   |
| VII Laminated       | Film-Paper           | Translucent & Colored | 3-10             | 30-50         | 3-5                   | Regular; H. C.         | Mod. to High      | Good            | Some       | Yes                    | Fair              | Smoothness  | Packaging, sealing, decorating                          |
|                     | Film-Metal           | Aluminum              | 6-8              | 25-35         | 15-25                 | Regular; H. C.         | High              | Excellent       | None       | No                     | Good              | Highest MVT rating  | Protecting  |
|                     | Film-Cloth           | White                 | 8-10             | 40-65         | 10-25                 | H. C. Regular          | High              | Good            | None       | Yes                    | Fair              | Non-corrosive   | Insulating  |
| VIII Reinforced     | Metal-Cloth          | Aluminum              | 5-8              | 45-65         | 5-15                  |                        | High              | Excellent       | None       | No                     | Good              | Vibration absorbent   | Insulating  |
|                     | Film-Rayon           | Translucent & Colored | 9-13             | 175-225       | 8-16                  | Regular; H. C.         | High              | Good            | Some       | Yes                    | Fair              | Shock resistant   | Bundling, unitizing                                     |
|                     | Film-Glass           | Translucent & Colored | 6-8              | 140-500       | 4-6                   | Regular                | High              | Good            | Some       | No                     | Fair              | —   | Bundling, unitizing                                     |
| IX Special          | Paper-Glass          | Tan                   | 8-16             | 140-300       | 8-16                  | Regular                | High              | Fair            | Some       | No                     | Fair              | —   | Bundling, unitizing                                     |
|                     | Double Face          | Clear & Colored       |                  |               |                       | Regular; H. C.         | Full Range        | —               | —          | Yes                    | Fair              | Film, cloth & paper tapes available                               | Cushioning, holding                                     |
|                     | Zoned                | Clear & Tinted        |                  |               |                       | Regular                | Full Range        | —               | —          | No                     | Poor              | Available on several backings with zones to order as specials     | Protecting, dividing                                    |

**Note 1:** The myriad of backing and adhesive variations cannot be condensed simply into table form. The above is a general guide; for further specifics, contact your tape manufacturer.

**Note 2:** REGULAR is pressure sensitive only; HC is pressure sensitive which cures under heat; S indicates a silicon high temperature pressure sensitive adhesive. Other adhesives are also available in heat or solvent activated (non pressure sensitive) forms.

®DuPont trade names.



◀ The comprehensive chart on the opposite page, tabulating significant properties of various types of pressure sensitive tape, was prepared especially for **PURCHASING** by the technical staff of **Permacel Tape Corp.**

Even the major uses of pressure sensitive tapes are too numerous to catalog in a brief article. The outstanding fact for the buyer to keep in mind is that in any given category of use—masking tapes, for example—there are many tapes specifically engineered for particular operations. The masking tape one would use for spray painting a truck body is not the type that would be specified where the job calls for baked-on enamel. In fact, to meet the different conditions imposed by various finishing methods, Permacel, for example, makes five distinct kinds of masking tape. This is typical of other use categories also.

Plant people are not likely to be fully informed about these distinctions. Year after year, a certain kind of tape may be specified for a given operation merely out of habit or personal familiarity. In the meantime, new tapes may have been developed, or the operation may have been modified in such a way that another kind of tape would be better suited to the job. Many jobs are being done by outdated methods that could be vastly improved through the use of tape. For example, leather goods manufacturers who used to glue weltings and linings in place have found that a crepe paper tape does a better job in far less time.

The purchasing agent, in contact with the plant on the one hand, and with his tape supplier on the other, is frequently in better position to spot these possibilities than is the production department. That such alertness can pay off handsomely is attested by the candy manufacturer who upped sealing output of polyethylene bags from 50 to 150 a minute by investigating small strips of pressure sensitive tape for sealing the packages.

Tape dispensing equipment is another area in which the purchasing agent can make suggestions for improved production

efficiency. New and more versatile dispensing machines have been developed that save time in taping operations. The purchasing man is often the first in the plant to hear of them.

### **Tape Testing Important**

Where tape is to be used on a fairly large scale, as in packaging, or is to be employed in some critical step of a fabricating process, it should be thoroughly tested on a production basis prior to adoption. This will not only insure selection of the right tape for the application; it may avoid the necessity of costly repacking or reprocessing that may result from a mistaken choice.

The purchasing agent's position at the crossroads of product information and plant requirements enables him to route the data he receives from manufacturers to appropriate department heads. He should pass along samples for testing—and inquire what results are achieved. He can bring together supplier representatives and plant engineers for a first-hand study and full discussion of the specific problems.

Investigation often discloses that production departments have found alternative uses for tape originally bought for a specific job. It may even be that more tape is being consumed in this way than in the intended application. It does not follow, however, that the tape thus diverted is the best or most economical for these other purposes. This suggests the desirability of an over-all survey of the company's use of tapes, preferably with the assistance of a tape specialist, to recommend the type best fitted for each operation.

### **Secure Assortment Discounts**

Substantial discounts can be earned on assortments of tape ordered at one time. Most tape manufacturers offer these assortment privileges. For buyers to take advantage of them, however, production departments must be educated to anticipate their needs, to check stocks of *all* tapes in regular use when requisitioning a particular one. This will go far, too, toward eliminating the need for rush orders.

A cost-saving by-product of assortment buying is that a single purchase order does the work of several.

### **• Broader Thinking about Tapes**

From the purchasing agent's vantage point, between supplier and ultimate user, he can help

**Attachments and loose parts of appliances are efficiently packaged and held to the main unit by pressure sensitive tapes during storage or shipment.**



## Common Uses of Pressure Sensitive Tape

Masking



Surface Protection



Identification



Packaging



Sealing

Sound Damping



both by encouraging broader thinking about tapes by the specifiers in design and production departments.

The matter of tolerances in the kind or size of tape used in a given operation is one area in which such an educational program can be fruitful. Where such tolerances are permissible, the designer should be urged to mention them in his requisition. All too often his specifications leave the purchasing department no latitude to order a slight variation that would serve just as well and cost less.

Sometimes, too, personal preference for one supplier's brand may, over a period of time, rise to the stature of a specification. When such preferences are founded more on habit than on logic, they impose a needless restriction on sound buying. They may even limit product development. Tape research is constantly producing more and better varieties of tape and, as in any competitive field, no one manufacturer has a corner on ingenuity. By passing along new information he receives in his contacts with suppliers, the purchasing agent can help production men keep an open eye and an open mind for tapes that may contribute to product improvement or manufacturing economies.

Finally, the tape distributor can be of great assistance to the purchasing agent. The distributor's tape knowhow, like his stock, is immediately available. Since not all distributors may normally carry the wide range of tapes used by customers in their areas, the purchasing agent can help himself by acquainting these sources, in advance, with the scope of his requirements. He can also help himself through emergencies by noting in his resource file the names of those who regularly stock the kinds and sizes he may need.

The important role that tapes play in modern industry stems from the great variety which research has made possible, as indicated by the tabulation herewith. The purchasing agent who coordinates the tape maker's knowhow with the needs of his colleagues in production is usually rewarded by lower costs all along the line.

# The Pulse of Business

AUGUST, 1956

## **PURCHASING'S** **Summary of** **economic** **conditions**

As this is written, the steel strike is still on. So far, its impact has been felt only in isolated areas. Most manufacturers are carrying on normal operations by drawing on steel stocks built up in anticipation of the strike. Every day, of course, more of them feel the pinch as supply of critical sizes and shapes runs low.

What can we look forward to after the strike? Higher steel prices, of course; they're a direct result. But, the side effects of the strike, though they won't be felt immediately, will likely be even more important. Unions are basically political organizations; union leaders must get results to be re-elected. And, leaders of other unions don't dare let themselves be outdone by the steelworkers.

This means that wages will go up throughout the economy. Manufacturers who are reluctant to follow the steel "pattern" may suffer from strikes. To the purchasing agent, this means possible interruptions in deliveries from key suppliers long after the steel strike has become history. It also means a steady pressure by suppliers for price increases. First comes the price hike in steel; then comes the price hike from vendors supplying fabricated steel. Finally, comes the pressure for general price increases for all suppliers attempting to pass on higher wages.

The only alternative to a round of price increases would be a further narrowing of profit margins. And, in some cases, profit margins would be wiped out completely if higher costs weren't passed on.

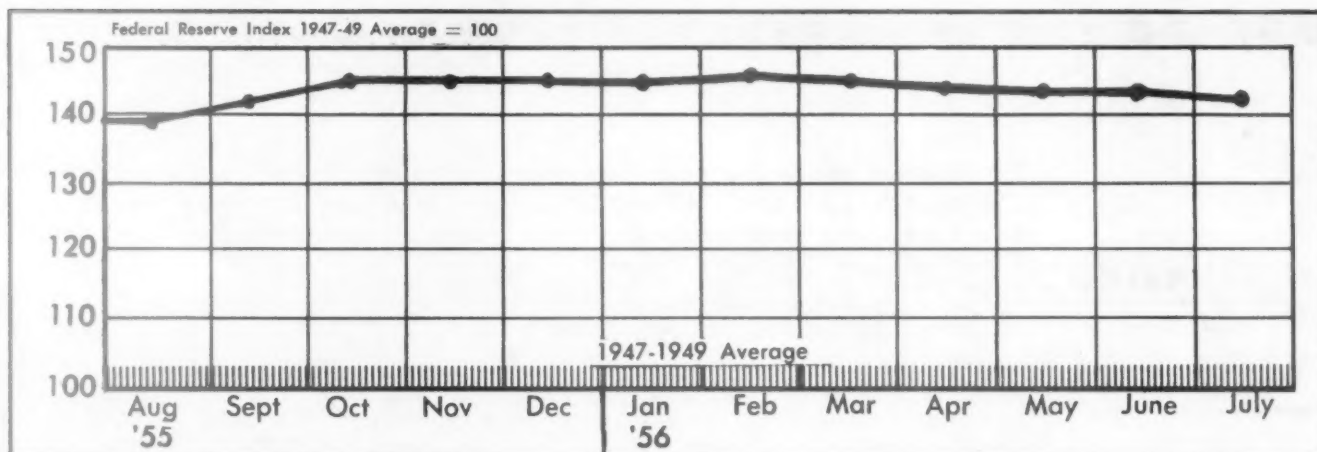
Thus, the economic aftermath of the steel strike doesn't look too encouraging. But, there is a brighter side. Higher wages will undoubtedly help boost spending. This should help retard the inevitable drop in demand that will occur when record-high consumer borrowing levels off.

Also, the strike will have a favorable effect on the inventory situation. Manufacturers inventories are up about \$5 billion over last year, while sales are only up but \$1 billion. Although this doesn't necessarily mean an inventory recession is in prospect, the "breather" from the steel strike certainly helps many manufacturers get stocks down to more normal levels.



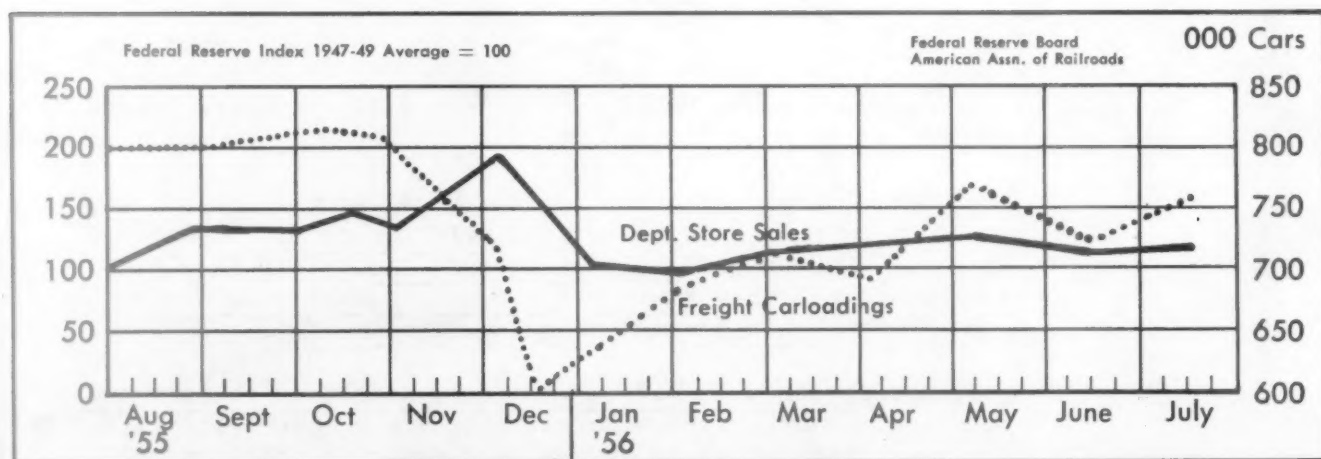
# THE PULSE OF BUSINESS

## PRODUCTION



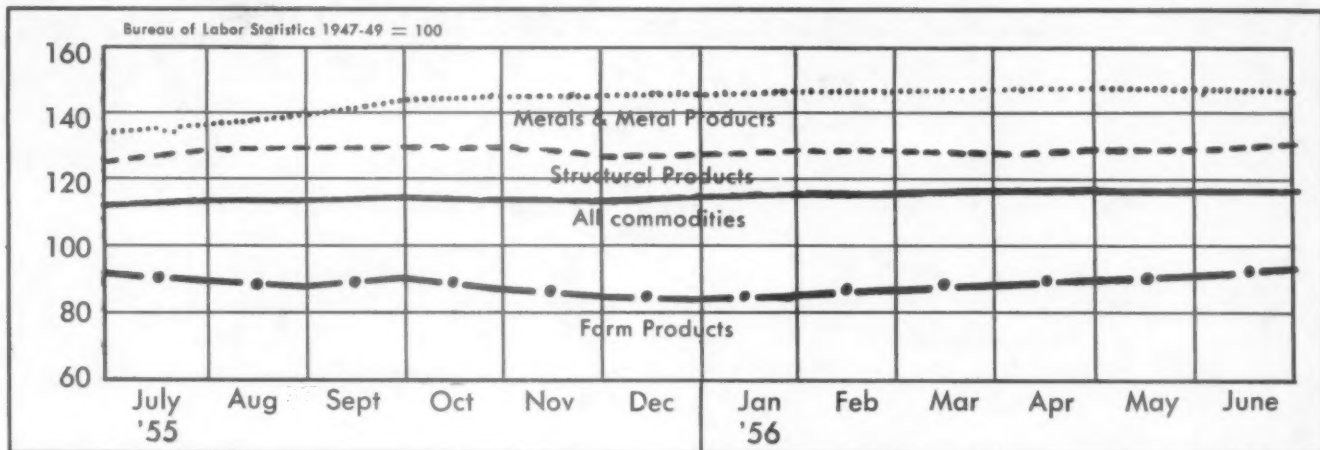
|   | BASE         | LATEST | MONTH AGO | YEAR AGO | % OF CHANGE IN |       |
|---|--------------|--------|-----------|----------|----------------|-------|
|   |              |        |           |          | MONTH          | YEAR  |
| Industrial Production Index .....         | 1947-49=100  | 141    | 142       | 139      | - 0.8          | + 1.5 |
| Steel Production (Weekly) .....           | 000 net tons | 320    | 2,378     | 2,073    | -86.6          | -84.6 |
| Electric Power Production (Weekly) .....  | mil KWH      | 11,498 | 10,951    | 10,138   | + 4.9          | +13.4 |
| Bituminous Coal Production (Weekly) ..... | 000 net tons | 10,230 | 8,845     | 9,535    | +15.6          | + 7.2 |
| Auto, Truck & Bus Output (Weekly) .....   | units        | 66,973 | 94,245    | 134,092  | -29.0          | -50.1 |
| Petroleum Output (Daily Average) .....    | 000 bbls.    | 7,034  | 6,916     | 6,610    | + 1.7          | + 6.4 |

## TRADE



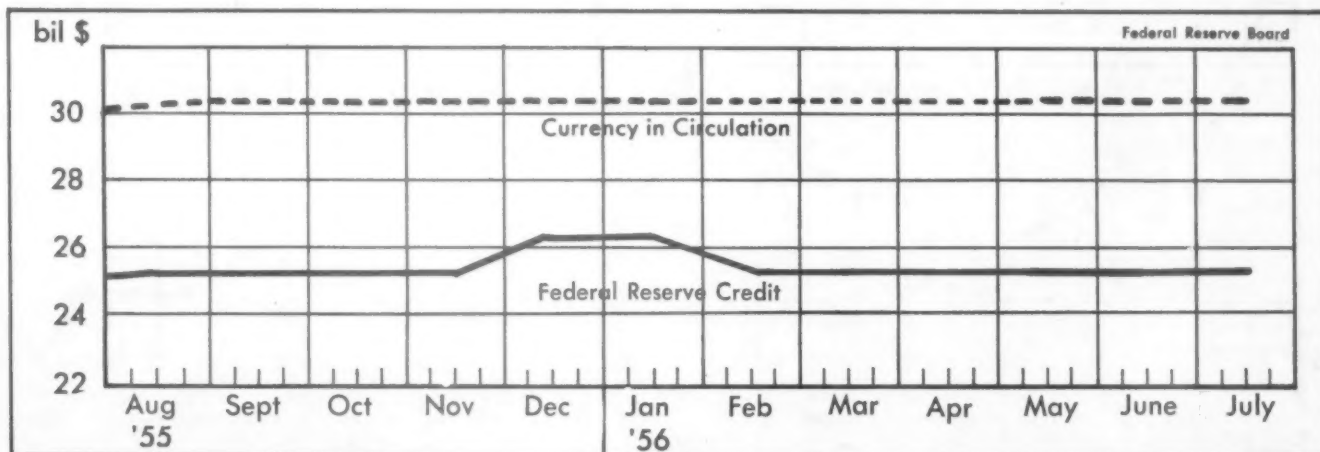
|   | BASE        | LATEST  | MONTH AGO | YEAR AGO | % OF CHANGE IN |       |
|---|-------------|---------|-----------|----------|----------------|-------|
|   |             |         |           |          | MONTH          | YEAR  |
| Dept. Stores Sales Index (Fed. Res.) .....  | 1947-49=100 | 105     | 109       | 98       | - 3.7          | + 7.1 |
| Commercial Failures (Dun & Bradstreet) .... | no.         | 249     | 238       | 231      | + 4.6          | + 7.7 |
| Freight Carloadings .....                   | cars        | 755,292 | 719,209   | 695,841  | + 5.0          | + 8.5 |
| Miscellaneous Carloadings .....             | cars        | 375,940 | 352,067   | 378,794  | + 6.7          | - 0.8 |

## PRICES



|   | BASE        | LATEST                          | MONTH AGO                       | YEAR AGO                        | % OF CHANGE IN MONTH | % OF CHANGE IN YEAR |
|---|-------------|---------------------------------|---------------------------------|---------------------------------|----------------------|---------------------|
| All Commodities (BLS) .....             | 1947-49=100 | 114.2                           | 114.4                           | 110.3                           | - 0.5                | + 3.5               |
| Farm Products .....                     | 1947-49=100 | 91.2                            | 90.9                            | 91.8                            | + 0.3                | - 0.7               |
| Metals & Metal Products .....           | 1947-49=100 | 145.8                           | 146.8                           | 132.5                           | - 0.7                | +10.0               |
| Structural Products .....               | 1947-49=100 | 128.9                           | 128.6                           | 123.5                           | + 0.2                | + 4.2               |
| Steel Billets (Pittsburgh) .....        | net ton     | \$68.50                         | \$68.50                         | \$68.50                         | 0                    | 0                   |
| Steel Scrap, heavy melting, Pitts ..... | net ton     | 45.00                           | 45.00                           | 37.50                           | 0                    | +20.0               |
| Copper, electrolytic .....              | lb.         | .40                             | .46                             | .36                             | -13.1                | +11.1               |
| Rubber (rib-smoked sheets) .....        | lb.         | .34 <sup>3</sup> / <sub>8</sub> | .30 <sup>3</sup> / <sub>8</sub> | .39 <sup>3</sup> / <sub>4</sub> | +13.1                | -13.6               |

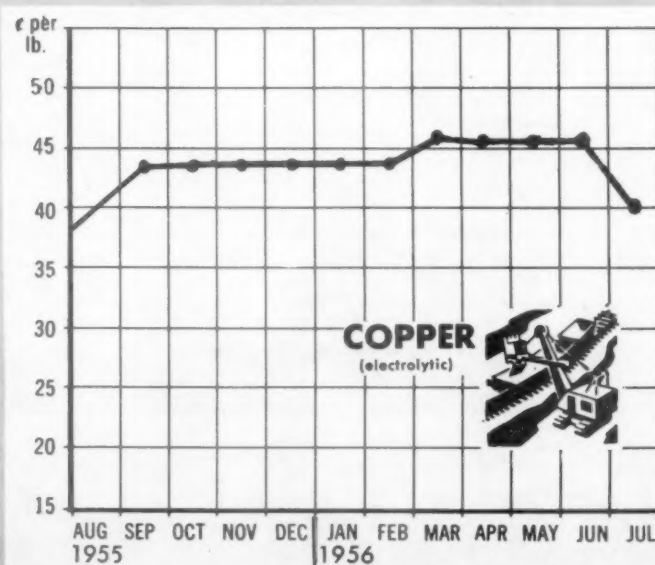
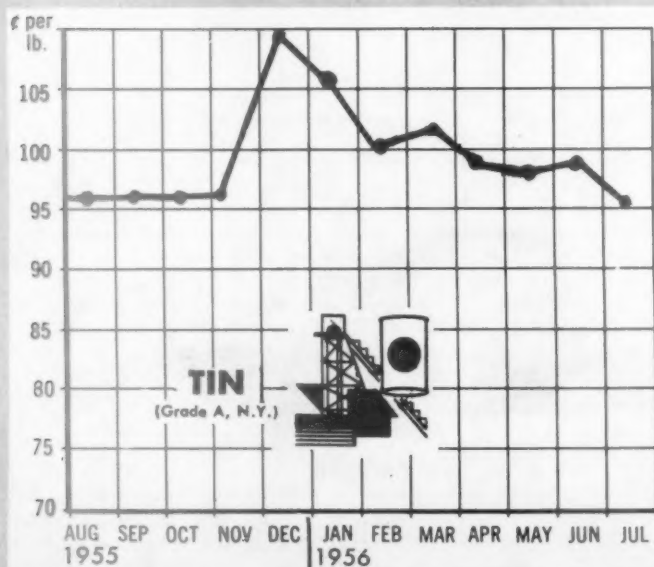
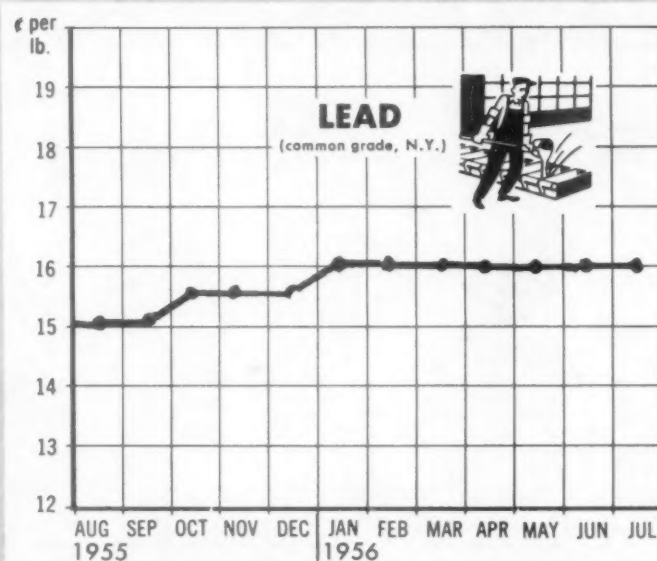
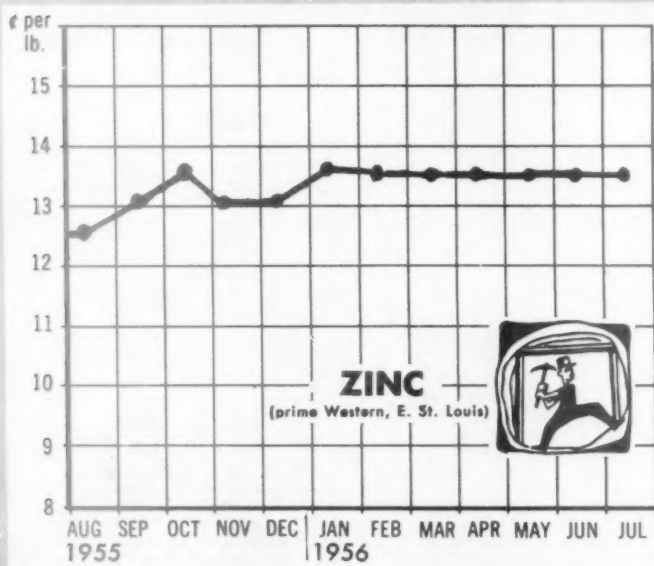
## FINANCE



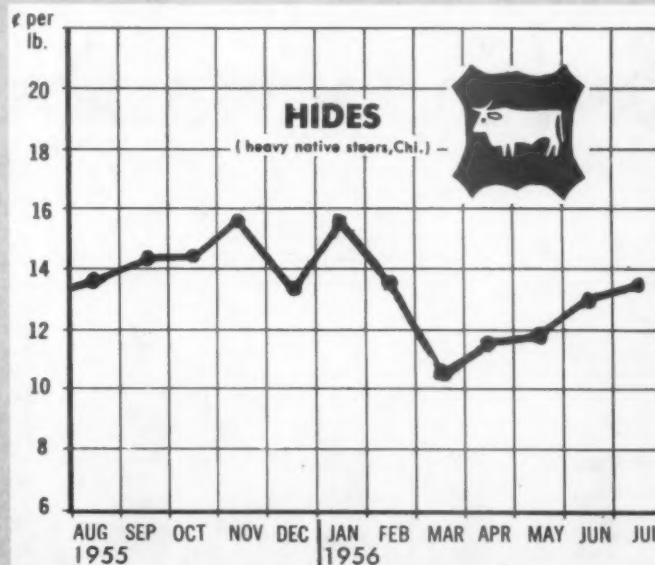
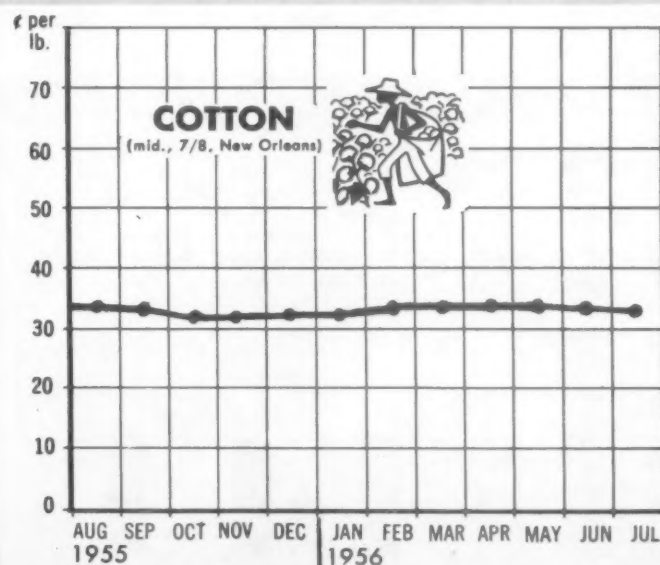
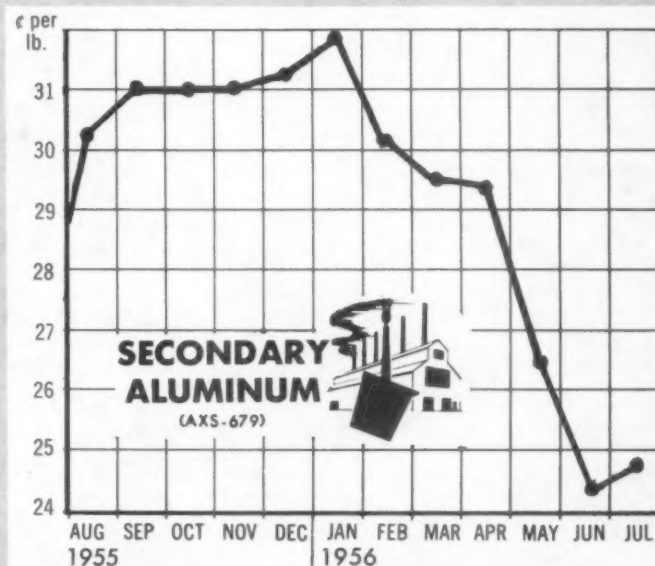
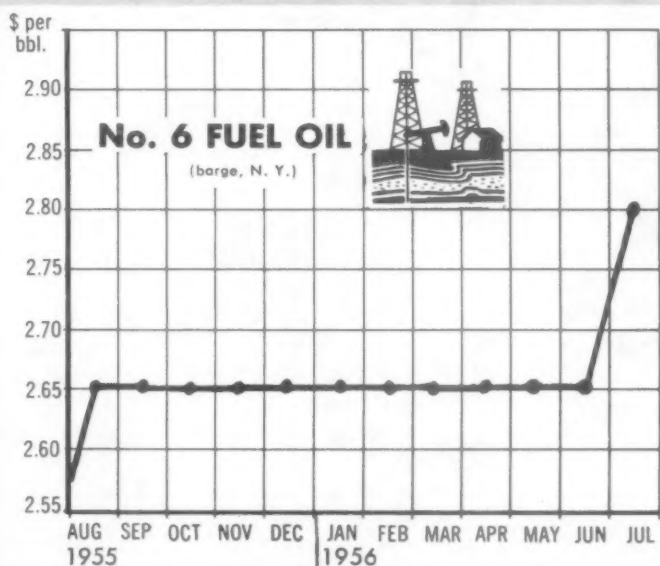
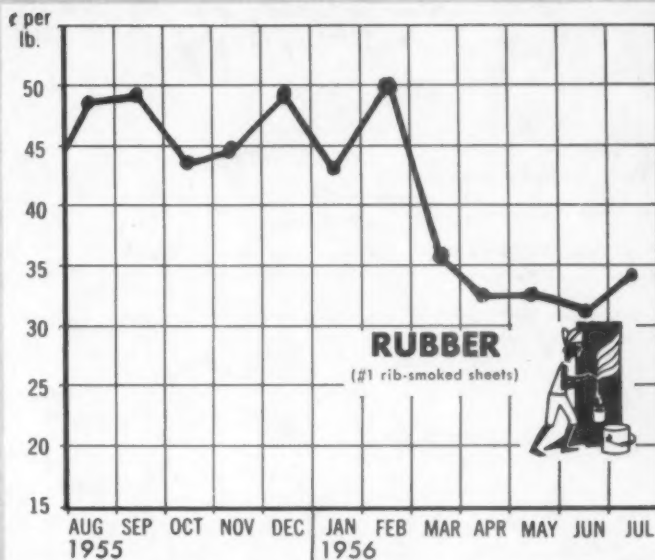
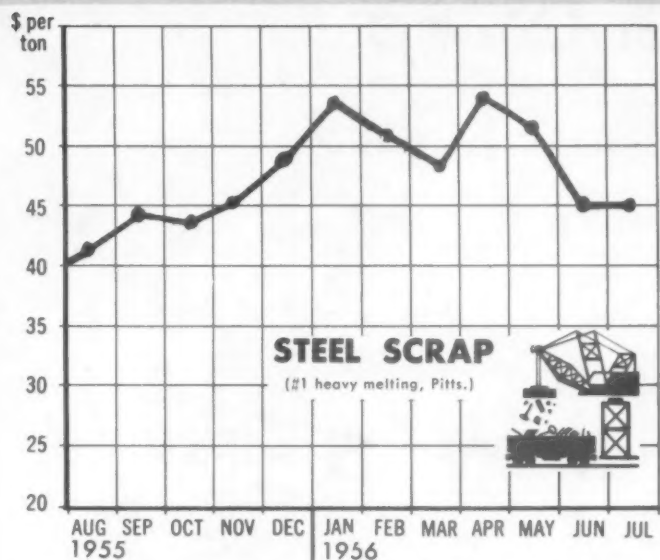
|  | BASE     | LATEST | MONTH AGO | YEAR AGO | % OF CHANGE IN MONTH | % OF CHANGE IN YEAR |
|--|----------|--------|-----------|----------|----------------------|---------------------|
| Stock Prices (Standard & Poor's) ..... | 1926=100 | 379.6  | 365.2     | 331.0    | + 3.9                | +14.7               |
| Bank Clearings (New York) .....        | mil \$   | 11,155 | 11,249    | 9,173    | - 0.9                | +21.6               |
| Federal Reserve Credit .....           | mil \$   | 25,684 | 25,320    | 25,265   | + 2.1                | + 1.6               |
| Currency in Circulation .....          | mil \$   | 30,763 | 30,505    | 30,299   | + 0.5                | + 1.5               |

## Copper Off 6¢, Further Price Cut Probable

Copper prices have finally eased off from their all-time highs of 46¢ or more per pound. At this writing, the big refiners are quoting a 40¢ price while custom smelters are offering the metal at slightly lower prices. Buyers in the know currently believe another reduction is probable before supply and demand are in equilibrium. Metals aren't in a buyer's market yet by any means. Most non-ferrous metals are near their all-time highs. And, as this is written, buyers are holding their breaths for the inevitable steel price increase which promises to be one of the biggest yet.





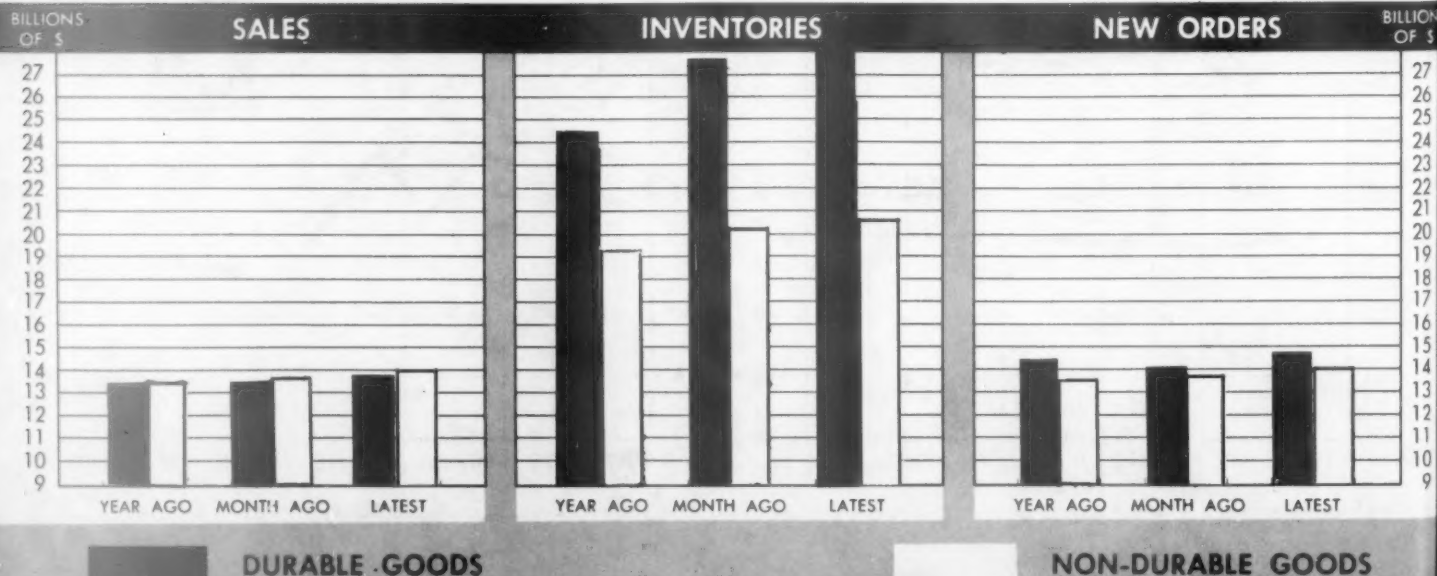


# THE PULSE OF BUSINESS

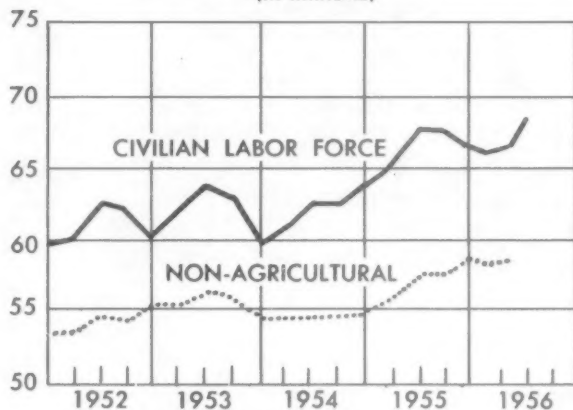
## Sales, Inventories and New Orders

| Value of Manufacturers' Sales<br>Seasonally Adjusted<br>(Millions of Dollars)            | 1955   | 1956   |        |        |         |        |
|--|--------|--------|--------|--------|---------|--------|
|  | May    | Jan.   | Feb.   | Mar.   | Apr.(r) | May(p) |
| All manufacturing industries.....  | 26,651 | 27,023 | 27,224 | 27,095 | 27,237  | 27,763 |
| Durable-goods industries.....  | 13,322 | 13,595 | 13,593 | 13,294 | 13,519  | 13,787 |
| Primary metal.....   | 2,213  | 2,369  | 2,457  | 2,444  | 2,442   | 2,442  |
| Fabricated metal.....  | 1,325  | 1,399  | 1,413  | 1,385  | 1,434   | 1,504  |
| Machinery.....   | 3,410  | 3,691  | 3,647  | 3,630  | 3,740   | 3,911  |
| Transportation equipment.....  | 3,609  | 3,194  | 3,137  | 3,021  | 3,001   | 3,041  |
| Lumber and furniture.....  | 1,125  | 1,141  | 1,147  | 1,102  | 1,105   | 1,111  |
| Stone, clay and glass.....   | 652    | 659    | 684    | 676    | 705     | 718    |
| Other durable goods.....   | 988    | 1,142  | 1,108  | 1,036  | 1,092   | 1,060  |
| Nondurable-goods industries.....   | 13,329 | 13,428 | 13,631 | 13,801 | 13,718  | 13,976 |
| Food and beverage.....   | 4,189  | 4,066  | 4,180  | 4,284  | 4,245   | 4,263  |
| Tobacco.....   | 336    | 329    | 338    | 323    | 348     | 350    |
| Textile.....   | 1,172  | 1,100  | 1,124  | 1,123  | 1,123   | 1,156  |
| Paper.....   | 841    | 866    | 904    | 893    | 884     | 928    |
| Chemical.....  | 1,961  | 1,931  | 1,940  | 1,939  | 1,970   | 2,062  |
| Petroleum and coal.....  | 2,346  | 2,475  | 2,515  | 2,567  | 2,499   | 2,636  |
| Rubber.....  | 465    | 415    | 445    | 451    | 451     | NA     |
| Other nondurable goods.....  | 2,019  | 2,246  | 2,185  | 2,221  | 2,198   | 2,135  |
| Book Value of Manufacturers' Inventories<br>Seasonally Adjusted<br>(Millions of Dollars) |        |        |        |        |         |        |
| All manufacturing industries.....  | 43,549 | 46,299 | 46,897 | 47,433 | 47,967  | 48,579 |
| Durable-goods industries.....  | 24,304 | 26,590 | 27,009 | 27,432 | 27,723  | 28,117 |
| Primary metal.....   | 3,236  | 3,519  | 3,570  | 3,677  | 3,688   | 3,767  |
| Fabricated metal.....  | 2,501  | 2,718  | 2,803  | 2,877  | 2,933   | 2,912  |
| Machinery.....   | 7,919  | 8,678  | 8,939  | 9,094  | 9,292   | 9,513  |
| Transportation equipment.....  | 5,876  | 6,711  | 6,816  | 6,800  | 6,781   | 6,799  |
| Lumber and furniture.....  | 1,735  | 1,871  | 1,783  | 1,792  | 1,812   | 1,886  |
| Stone, clay and glass.....   | 897    | 966    | 976    | 1,010  | 1,022   | 1,037  |
| Other durable goods.....   | 2,140  | 2,127  | 2,122  | 2,182  | 2,195   | 2,203  |
| Nondurable-goods industries.....   | 19,245 | 19,709 | 19,888 | 20,001 | 20,244  | 20,462 |
| Food and beverage.....   | 4,391  | 4,372  | 4,361  | 4,391  | 4,448   | 4,487  |
| Tobacco.....   | 1,842  | 1,828  | 1,832  | 1,870  | 1,865   | 1,868  |
| Textile.....   | 2,396  | 2,485  | 2,477  | 2,457  | 2,492   | 2,497  |
| Paper.....   | 1,038  | 1,069  | 1,083  | 1,117  | 1,134   | 1,142  |
| Chemical.....  | 2,995  | 3,248  | 3,339  | 3,361  | 3,407   | 3,502  |
| Petroleum and coal.....  | 2,670  | 2,754  | 2,793  | 2,785  | 2,817   | 2,845  |
| Rubber.....  | 810    | 935    | 970    | 979    | 979     | NA     |
| Other nondurable goods.....  | 3,103  | 3,018  | 3,033  | 3,041  | 3,102   | 3,147  |
| Manufacturers' New Orders (Seasonally Adjusted)  |        |        |        |        |         |        |
| All Manufacturing Industries.....  | 27,720 | 28,074 | 27,627 | 26,912 | 27,758  | 28,707 |
| Durable goods industries.....  | 14,331 | 14,683 | 14,107 | 13,337 | 14,073  | 14,678 |
| Nondurable goods industries.....   | 13,389 | 13,391 | 13,520 | 13,575 | 13,685  | 14,029 |

p — preliminary      r — revised      n.a. — not available

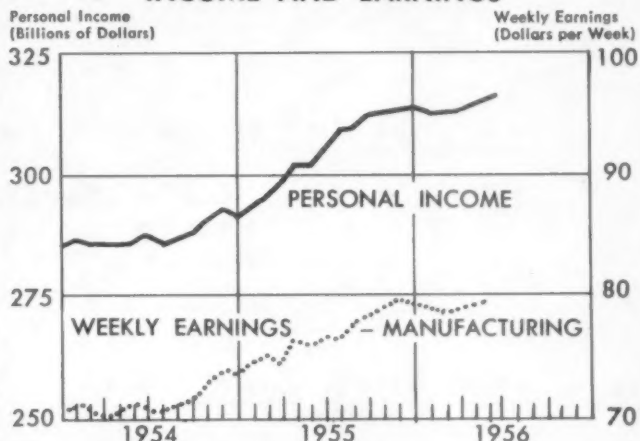


### EMPLOYMENT (in millions)



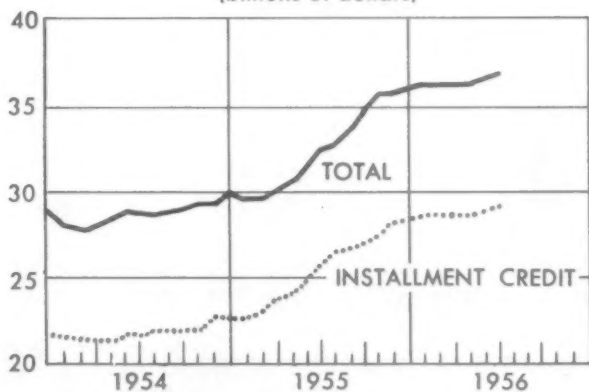
Source: Bureau of the Census

### INCOME AND EARNINGS



Source: Departments of Labor and Commerce

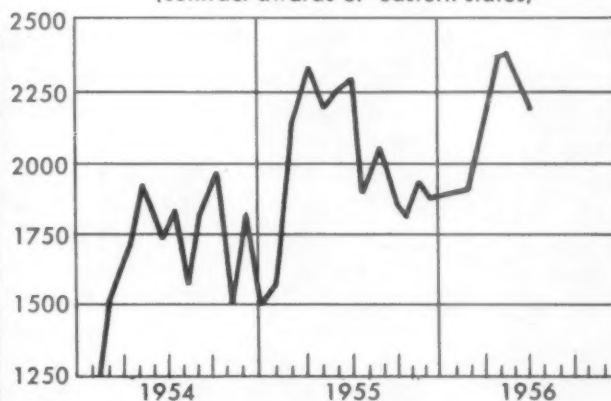
### CONSUMER CREDIT (billions of dollars)



Source: Federal Reserve Board

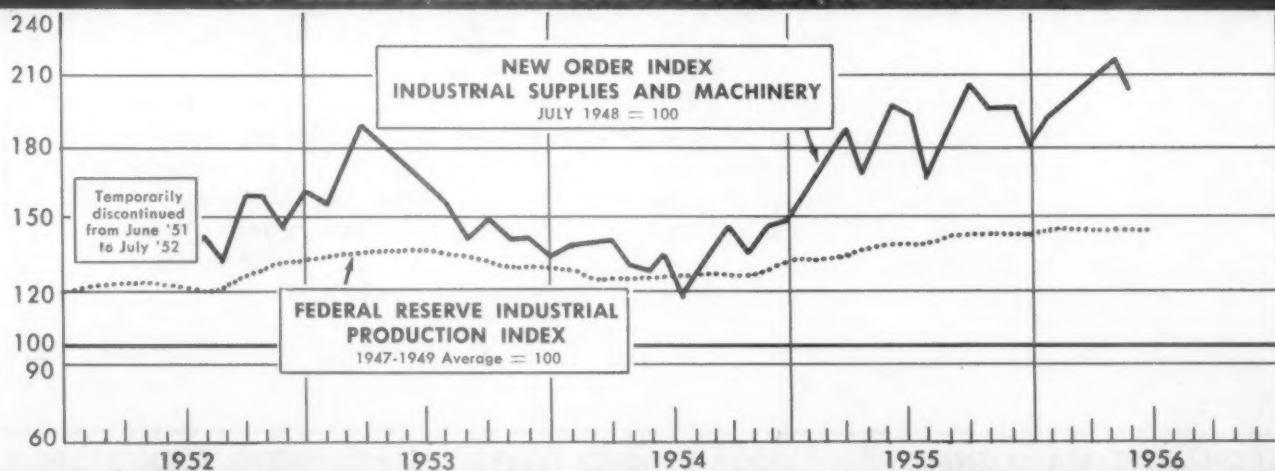
### CONSTRUCTION

(contract awards 37 eastern states)



Source: F. W. Dodge Corporation

### NEW ORDER INDEX INDUSTRIAL SUPPLIES AND MACHINERY



Source: American Supply & Machinery Manufacturers' Association

BILLION  
OF \$

27  
26  
25  
24  
23  
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9



## Straws in the Trade Wind

WAREHOUSE STEEL PRICES UP - Warehouse steel already costs more even though the big hike in mill prices is yet to come. Prices have been boosted from \$5 to \$10 per ton by warehouses because of wage increases granted employees, and generally higher costs. Presumably, there will be a second increase in warehouse prices later to pass on higher costs of steel from the mills.

\$400 BILLION ECONOMY - Despite dips in auto production and residential construction, total output of goods and services has reached the record annual rate of \$402 billion. Last year it averaged \$391 billion. Most of the boost is the result of rapid growth in service industries. Slightly higher farm prices also accounted for some of the increase.

CONVERSION DEALS COME BACK - Remember the conversion deals where one mill's ingot was shipped to another mill for rolling with the buyer paying a price two to three times normal because of excess shipping and handling costs? They're back again. Steel users that are pinched by the strike are now making them. The premium cost of the steel is more than offset by the benefits of keeping the plant running.

NICKEL PREMIUMS DROPPING - Nickel that is officially priced at  $64\frac{1}{2}\text{¢}$  per pound was bringing over \$3.00 just a few months ago. Two months ago it was down to about \$2.50; recent prices range around \$1.50. One big reason for the drop is the cut-back in auto output. Other reasons may be the Senate probe of the nickel black market and the ban on export of nickel-bearing scrap. Nickel will still be plenty tight for some time to come. It just has too many vital defense uses relative to its supply.

SECONDARY ALUMINUM ALSO SAGS - For the first time in well over a year, second-hand aluminum at  $24\frac{1}{2}\text{¢}$  costs less than the virgin metal. It went for a premium of 8¢ about six months ago. Reason for the price difference was the fact that demand for aluminum was out of balance with supply. New mill capacity is now taking the pressure off the secondary market. Prospects for further price reductions are, however, dim. Over the next few years, demand for the metal will probably grow even faster than supply because of general growth, new applications, and the fact that, historically, aluminum is still a bargain compared with competing metals.

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THIS is the third and concluding article in a series on the role and responsibilities of Purchasing in material management.

The first article (March issue) dealt with the over-all concept of material management as a function embracing and over-riding specialized departmental objectives.

The second article (June issue) listed basic company decisions involved in material management.

The present article deals with external factors, relating to sources of supply, for implementing the material management program—both before and after the order is placed.

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ONE CONCEPT of purchasing regards it simply as "placing an order". Some buyers, by their attitude and behavior, imply that getting the right material at the right time, in the right amount and at the right price, is a routine process involving little more than soliciting bids from representative vendors and awarding a contract to the low bidder.

There are some products that are purchased in this manner. On "shelf items", quality is reasonably standardized and a number of sources are usually available. Even the price tends to follow a uniform "established market". Of course, it still behooves the buyer to seek economies through quantity purchasing and to insist on the fewest possible demands for deviations from standard items that will serve the purpose. For the most part, these are internal considerations of Material Management, as discussed in a previous article (June issue, p. 99).

Wherever non-standard items are procured, Purchasing, as an instrument of Material Management, must seek to plan, direct, control and coordinate the activities of suppliers in providing the product required. When materials are bought to individual specification and performance, the services and productive capacities of outside producers are harnessed to the requirement in the same manner as in internal production. Purchasing, under these circum-

stances, does a great deal more than merely place orders. It is called upon to exercise managerial controls over the performance of the vendor in the areas of:

**Quality Control  
Production Control  
Cost Control**

It recognizes that there is no established market for such items, and that right quality, right quantity, and right delivery must be planned, scheduled, and controlled, while right price is a matter to be analyzed and negotiated.

In internal manufacture, the parts, assemblies and finished products are designed and reduced to produceable standards by Engineering. They are translated into work orders or opera-

tion sheets in such a way as to provide clear instructions to Manufacturing on the materials and methods to be used. According to the sales schedule and the production lead time required, a production plan is developed in the Planning Department, while manpower and machine work loads are scheduled and followed up by Production Control. Cost estimates are prepared, and actual costs are reviewed and kept in line by Cost Control. At every step of the manufacturing process, all activities are coordinated by Management to secure:

**Adherence to quality standards  
Production on schedule  
Minimum total cost**

Now, merely because an item is designated as a purchased part

# Your Vendor's Business Is YOUR Business

*Quality, cost control, and scheduling in the vendor's operations are vital factors in any effective material management program. Where these "external" factors are concerned, the role of Purchasing is of paramount importance.*

**By Louis J. De Rose**

does not remove the need for performance of these same activities and achievement of these same objectives. Losses can result from inefficiencies on the part of outside suppliers as well as from those within the company. But, since purchased items are procured under contract, such

controls can be implemented only through:

**Cooperation of the vendor  
Language of the contract  
The active, personal effort  
of the buyer himself**

Where the vendor is efficient and reliable, the need for the

buyer to seek such controls is greatly reduced. However, even under these circumstances, the buyer as a Material Manager must concern himself with the quality, production, and cost of everything he buys. This article deals with some specific methods, tools, and techniques he might use to help achieve that purpose.

## Quality Control

**A. Communication of clear and complete specifications** to the vendor is the first requirement of quality control through Purchasing. In the case of catalog or shelf items, the standards and specifications are definite and well known, so there is little problem for Purchasing to communicate its requirements. However, where items are to be produced to the buyer's design, performance or functional characteristic, or where engineering changes are called for, the possibility of error, omission, or misinterpretation of specifications is a real danger.

For procurements of this kind, it is not enough that the buyer merely indicate his wants. He must assure himself that drawings and specifications are complete and clear before he transmits them to the vendor. He must ascertain that they are understood, and will not be deviated from without authorization. In the event of a problem in interpretation or application of the specification, he must see to it personally that the problem is resolved immediately.

Just as product design and specification are coordinated with internal methods of manufacture, so too there must be coordination of purchase requirements with vendor production. The only effective agency for such coordination is Purchasing.

**B. Discriminating selection and evaluation of sources** is the second element of quality control.

Purchase specifications and standards are only as good as the suppliers selected to produce them.

Accordingly, it should be the constant aim of Purchasing to choose only those sources with the facilities, personnel, financial stability, and know-how capable of assuring adherence to quality. The buyer should make it his business to visit his suppliers regularly and become familiar with their products and processes of manufacture. If, because of the complexities of the requirement, the buyer himself cannot evaluate the capabilities of the source, he should call upon specialists within his own organization, and direct and coordinate their activities to that end.

Further, it should be the constant objective of Purchasing to seek out new sources, despite the fact that present sources may be satisfactory. Modern industry is dynamic. New firms marketing new products, and featuring new techniques of production, are appearing on the industrial scene daily. Tolerances and finishes which once seemed impossible to achieve, are commonplace today. Designs and structural features, functional and performance characteristics of both materials and fabricated parts, surpass anything hitherto known. The buyer who remains complacent with his present supply sources deprives himself of the advantages of modern technology, not only for reducing costs, but also for improving quality.

**C. Enforcement of effective inspection procedures** is the third element of quality control. These may be established either by contractual agreement with the vendor or by recourse to the rights of buyers under common law.

The very minimum requirement of any inspection procedure is that it shall take place finally at the buyer's plant and if the item is found not to conform to specifications, it be rejected.

Where items are bought to buyer specification, however, such a procedure is inadequate to assure quality control comparable to that performed internally. By contract, or by vendor agreement, the buyer should reserve the right to perform inspection anywhere and any time. He should seek the right to visit suppliers' plants and inspect work in process. This is particularly important where completed assemblies are being produced, so that conclusive quality determination might need destructive testing.

Even after goods are accepted, the buyer's concern with quality control does not cease. One of his more important rights has to do with Warranty—the vendor's expressed or implied assertion that what he sells will conform to specific requirements, or will meet functional purposes for which his product is intended. When a buyer purchases to his own design and specification, he must at least seek a stated warranty from the seller that the goods will be free from defects of material and workmanship. When he buys a vendor-designed item, there is normally an implied warranty that it will perform and function properly.



When discrepancies or defects are found, even after goods have been inspected and accepted, the buyer may, under his rights of warranty—and subject to particular circumstances—elect one of several alternative remedies:

**Reject without replacement**  
**Reject for replacement**  
**Rework internally, charging cost back to vendor**  
**Replace from another source and charge difference in cost, if any, to the vendor**

Of course, the buyer has the obligation of making his inspection within a reasonable time after goods are received, and notifying the supplier of any discrepancy as soon as it is discovered.

**A. Analysis** of vendors' facilities, capacities, and lead time requirements is the first step in production control by Purchasing. For schedules, quantities, and deliveries on time to meet internal requirements, this step is preliminary to all else.

When a buyer purchases an item to specification, he is in effect contracting for a portion of the vendor's facilities and productive time according to a schedule dictated by his own needs. When he asks suppliers to quote, he naturally seeks confirmation from them that they can conform to his schedule. However, under competitive pressures, or through desire to gain new business, vendors may submit quotations with neither the necessary facilities nor capacity available at the moment. Again, situations change overnight. Plant capacity may be extended or reduced. Equipment may be obsoleted, replaced, improved, removed, or added to. Past production cycle times may be speeded up or slowed down. Unless the buyer keeps abreast of such developments, his information is inadequate to schedule procurements properly.

Internal production schedules rely upon purchased materials and parts as much as they do upon internal manufacture. To avoid over-loading suppliers or buying from vendors with equipment and processes unsuited to the needs, the buyer—as a Material Manager—must:

**Survey facilities before he does business with a new source**

**Evaluate performance of present sources as to rates of rejection, adherence to delivery schedules, production lead times, and managerial efficiency**

**Review and keep up to date any important additions or deletions in equipment and personnel**

**Learn as much as he can of the manufacturing methods and of the personalities of the management**

**B. Scheduling** of purchase order quantities and deliveries—as well as subsequent cut-backs, additions, speed-ups and changes—is the next step in applying production control considerations.

To do this effectively, the buyer must first discard the notion that purchase schedules are dictated wholly by requisitioned dates and quantities. Requisitioned schedules are established, theoretically, to conform to the lead time requirements of internal manufacture. Frequently, however, they are established arbitrarily, for convenience, or for safety, and are so distorted by these factors that neither quantities nor deliveries bear any realistic resemblance to production needs.

Regardless of how requisitioned schedules are established, it is still the responsibility of Purchasing to adjust them within the capacities and productive limitations of the vendor. Purchasing may provide some information to those who originate requisitions, as to part or vendor lead times, but this information is not always used, or it may be out of date at the time of use. Especially when there are changes in design or specification, or in quantity and delivery requirements, Purchasing must adjust procurement schedules with external produc-

tion factors. This adjustment becomes more pronounced when Purchasing seeks to take advantage of quantity discounts, or to avoid secondary set-up charges after an original schedule. Also, it is obvious when terminations or cut-backs are dictated by internal necessity or convenience.

The adjustment of quantities and rates of production to capacity is in every sense a production control function. This is no less true when it is applied to purchased items. As a member of Material Management, Purchasing must acknowledge the production control aspect of purchase order scheduling, and learn the necessary skills and techniques to schedule more efficiently.

**C. Follow-up and expediting** of purchase orders is the third phase of production control through Purchasing.

In every organization, when internal production schedules are planned and put into work, they are closely followed to assure that work scheduled is actually performed as planned. This includes confirming the status of work in process and, where necessary, the application of personal time and effort to overcome barriers to the meeting of the schedule or to meet changed requirements of the original schedule.

In respect to purchased items, Purchasing must perform the same activities. The need is most urgent during periods of tight supply and general business prosperity. When demands by customers exceed available production, sellers must ration and allo-

## Production Control

cate their limited facilities and supplies. Under these circumstances, tardy action by the buyer and routine follow-up will deliver little more than promises. Only vigorous and persistent expediting can obtain materials.

Follow-up is especially important on items bought to the buyer's specification. Non-standard parts and materials, by their very nature, are not subject to the same intense price competition prevailing for the standard. There is relatively less pressure that can be brought to bear on the immediate producer by "competitors with stocks available". Accordingly, for non-standard items, there is not the same urgency on

the part of suppliers to cater to the customer's needs. In periods of tight supply, this tendency is even more pronounced. Under these circumstances, Purchasing must make use of the same tools of follow-up and expediting as are applied in internal manufacture:

#### **1. Know the status of orders.**

An excellent device to achieve this is the progress report submitted periodically by the vendor, indicating units completed, work in process, man-hours expended per unit or lot, rejections and reworks. In addition, if the procurement be urgent, plant visitations by the buyer or field expediting may be called for.

#### **2. Project the information.**

By analyzing and projecting the data obtained, Purchasing can detect "bottlenecks" and problems before they occur, and press for corrective action.

#### **3. Solve problems promptly.**

Purchasing must resolve such problems while time is still on the buyer's side. If this cannot be done at the buyer-salesman level, it should be brought to a higher level. If technical advice or assistance is required from within, it should be sought. Since delays in purchase deliveries are just as severe as delays in internal production, it is Purchasing's responsibility to seek solutions at all levels.

## **Cost Control**

**A. Securing quotations** is an obvious first step in cost control of external production through Purchasing. To establish in fact what "lowest cost" might be, entails the development of information regarding prices available from, or agreeable to, potential suppliers. The primary objective is to get such information from a representative cross-section of the market for purposes of comparison, and as a preliminary step to actual negotiation.

Don't fall into the utterly illogical habit of sending out some arbitrary and fixed number of inquiries. Depending on the nature of the product, the quantity required, and the availability of suppliers able and willing to produce, the number of quotations may vary from a single inquiry on a patented or proprietary item, all the way up to a complete exploration of the market where large quantities are involved and a wide potential of production exists. In the case of standard parts and materials, a relatively small sampling of the market may give you all the information you need, whereas on non-standard items the quotation process may reveal dramatic variations and differences of interpretation.

Select most carefully the suppliers you ask to quote. For a true evaluation of the cost factor, they should be comparable in respect to productive capacities, equipment, financial stability, manufacturing and engineering know-how.

When quotations are sought for a specific quantity, it is often good practice to request quotations on other quantities as well as on that desired. Bracketing the desired amount with a smaller and a larger quantity is an effective way for the buyer to compare more intelligently the reasonableness of the prices quoted. Also, it provides the buyer with a useful tool for adjusting increased or decreased quantities within the pricing structure initially quoted. Where a buyer requests prices for only one amount, he must request new quotations from the vendor on changed amounts and is at a disadvantage in negotiating favorable prices.

Under all circumstances, remember that quotations are merely statements of price information preliminary to negotiation of final terms. There is no obligation on the part of the buyer to accept or be bound by the figures quoted even though it

be phrased by the vendor as an "offer to sell". In the Material Management concept of Purchasing, the quotation is a tool for cost control.

**B. Cost analysis** techniques should be applied to vendors' quotations. Of course, it is not always possible to analyze quotations where the processes of manufacture fail to disclose product cost by unit, by lot, or by average. This is certainly the case where items are produced by a continuous process so that individual units of production are indistinguishable from each other and costs are reckoned on a process-time basis. Materials and parts which are mass-produced to standard design and specification fall within this category. However, where items are produced to the buyer's design, the opportunities for Purchasing to minimize material costs through cost analysis are tremendous.

A vendor's quotation submits, in effect, an estimate based upon his past experience, or a prediction of his cost based upon anticipated experience. Depending upon his interpretation of the specifications, the processes of his manufacture, the preciseness of his standards, and his judgment of what the market will bear, he renders a price. In arriving at that price, however, he himself must have done at least some sort of cost analysis.



The buyer's approach to cost control on purchased items will be simplified if he can persuade the seller to submit—either at the time of quoting or later, when circumstances may warrant—a breakdown of the costs included in his quoted price. In such a breakdown, costs should be segregated to show:

**1. Raw materials and purchased parts**—quantities and prices.

**2. Direct labor**—man-hours and hourly rates.

**3. Factory overhead**—percentage and base of application.

**4. Tooling cost**—as a separate item, to be amortized over the quantity in question.

**5. Start-up and other pre-production costs**—broken out of the unit price.

**6. General and administrative expenses**—percentage and base of application.

**7. Contingencies or allowances** if any—specifically stated.

**8. Profit.**

Obviously, it is not always possible to secure this information from the seller. Where cost breakdowns are refused, the buyer may still make an internal analysis of vendors' quotations. Material costs, hourly rates, and production times can be estimated from his own company's experience or from general knowledge. By following a consistent analytical procedure with all quotations on a given procurement, he can establish a basis for comparisons based on time and costs rather than total price alone. For more precise calculation, he might request a formal estimate from a cost analyst within his own organization. In any event, he is better equipped to negotiate favorable pricing with cost analysis than without it.

In the case of long production runs, or successive procurements with the same supplier, the buyer

should make use of the learning curve techniques of cost analysis, (cf. May 1956 issue, p. 50.) The learning curve is a measure of direct labor productivity over a given quantity of production. As used by Purchasing, it serves to establish product prices on the basis of probable future productivity rather than merely on past or average cost. It is a potent tool of Material Management for reducing prices to reflect declining cost.

**C. Negotiation** is essential for achieving all other external objectives of Material Management. It is the most effective means for controlling material costs (i.e., purchase prices).

Basically, negotiation is the process of review, analysis, and mutual concession whereby conflicting opinions, objectives, and interpretations of buyers and sellers are resolved. In the face-to-face discussions of the negotiation meeting, the buyer may question the weight and validity of all subjects he believes pertinent to the procurement in question. He may explore areas such as pricing terms, estimated costs, anticipated productivity, tooling and set-up charges, contingencies and allowances. He may bring to bear his knowledge of the product, its manufacture, its market, its suppliers—all in an attempt to achieve maximum value for his company's dollar.

As a Material Manager, the buyer recognizes that quoted prices are essentially *estimated* prices reflecting, at best, past experience. In negotiation the buyer seeks not only to ascertain the objectivity of this past experience, but also to gain a share of the learning and added productivity which will reasonably be the future experience of the vendor during the procurement under consideration. Like Value Analysis, negotiation digs beneath the

surface concepts and rejects the assumption that competitive bidding automatically achieves these objectives for the buyer.

Negotiation is in no way contradictory to the quotation process. It is merely a tool to supplement it. Quotations are still solicited from reliable vendors, but the quote is an initial step rather than a terminal one. Where buyers and sellers are many, the product standardized, the market active, and values responsive to forces of supply and demand, competition itself will generate fair prices more effectively than any other system known. But when these circumstances are not present, the factors which make for competitive bidding are lacking and the quotation process, unaided, leaves much to be desired.

Successful negotiation, since it begins where the quotation process leaves off, results in cost reductions. Material costs represent the largest percentage of total product cost in industry today. Whatever savings can be effected in minimizing material cost result in large savings in total cost and sizeable contributions to profit performance. Further, since successful negotiation is the product of a buyer's questioning attitude, his aggressive spirit, his knowledge, initiative, ingenuity, and personal skill, these savings and contributions are achieved with little or no additional investment.

Negotiation enters into all three phases of the external aspect of Material Management through Purchasing. It is the most effective single tool of Purchasing in achieving its objective of material cost control. It is important, if not absolutely essential, in achieving the objectives of quality and production control. As an instrument of Material Management, Purchasing is indeed "Buying by Negotiation".

## The Management Function

To sum up the concept of Purchasing's role in Material Management, as developed in this

series of articles, Purchasing is not a "service function", passively performing activities deter-

mined and decided by others. It is an active, dynamic function, participating equally with others in the planning, directing, controlling and coordinating of material requirements. Only by ful-



filling this role can Purchasing make its fullest potential contribution to company management and profits. To achieve its purpose, it must vigorously pursue the following objectives:

1. Where Purchasing does not already share in Material Management, as defined, it must seek to do so. It should not be satisfied with merely "lip service" as an equal, but must strive to earn and to achieve rank commensurate with its potential.

2. In the Material Management concept, the dividing line between Purchasing and Production Control is simply and clearly determined by whether production is internal or external. Where company-designed production is performed by a vendor, the schedul-

ing, controlling and coordinating activities should be performed by and through Purchasing.

3. The decision to make or to buy (internal or external production) must be a group decision in which Purchasing participates. The decision should reflect the knowledge, experience, and judgment of Purchasing in respect to external production factors.

4. Where coordination and control are required between outside production (the vendor) and any internal activity, they must be achieved by or through Purchasing. Further, where coordination is required between internal activities which affect, or are affected by, external production, that too should be done by Purchasing.

5. To function effectively in the

Material Management scheme, Purchasing must make use of the tools of Management as applied and practiced in internal production. Most important are those that influence quality control, production control, and cost control. It must develop and train purchasing personnel in the methods and techniques of control, their uses and limitations.

6. Finally, Purchasing must overcome its self-consciousness and lack of self-assurance. It must become aggressive, articulate, and dynamic, and must broaden its vision and perspective as a Management function. It must acknowledge and earn the role it can play in Material Management, and "sell" the importance of that role to others.

## MATERIAL MANAGEMENT

Material Management is defined as the planning, directing, controlling, and coordinating of all those activities concerned with material and inventory requirements, from the point of their inception to their introduction into the manufacturing processes. It begins with the determination of material quality and quantity, and ends with issuance of the material to production departments in time to meet customer demands on schedule and at the lowest cost.

| Material Management<br>cuts across many<br>specialized responsibilities | Internal Decisions<br>essential to<br>Material Management           | External Factors<br>that implement effective<br>Material Management |
|---|---|---|
| Design Engineering  | Standards of material<br>specifications                             | Evaluation and selection<br>of vendors                              |
| Production Planning   | Make-or-buy considerations  | Negotiation   |
| Production Control  | Introduction and control<br>of engineering changes                  | Communication with vendors  |
| Quality Control   | Predicting, planning, and<br>scheduling of material<br>requirements | Scheduling of requirements  |
| Cost Control  | Establishment and control of<br>inventory stock accounts            | Vendors' quality and cost<br>controls                               |
| Purchasing  | Determination and disposal<br>of surplus and obsolete<br>materials  | Expediting  |
| Sales Commitments   |   | Inspection procedures   |

# What the P. A. Should Know about Black Light

**By Keenan Goodman**

Purchasing Agent  
Research Associates, Los Angeles



**IDENTIFICATION.** Many substances such as minerals can be positively identified by the way they glow under black light.

**E**VERY schoolboy in this day and age is familiar with the terms "ultra violet energy" and "black light". Yet they designate a phenomenon which is so poorly understood that it is virtually ignored in many industries where it might be the means of saving thousands of dollars.

This phenomenon comprises three types of electromagnetic

radiation in the frequency range between visible light and gamma-rays. The actinic type, with wave lengths of about 2500 to 3500 angstrom units, is what most of us think of when the term "ultra violet" is used, mainly because rays in this category are able to tan or pigment human skin. Short-wave ultra violet radiation, in the range of 1000 to 2500 ang-

strom units, does not have the pigmentation effect, but can produce bactericidal reactions which are valuable for purposes of sterilization. Long-wave radiation, with wave lengths in excess of 3500 units, is probably the most industrially practical member of the family; it has neither of these effects.

## **Methods of Generation**

The carbon arc lamp is the oldest man-made generator of ultra violet radiation. But since its output is scattered over the entire ultra violet spectrum, like the output of the sun, it produces too many unnecessary or unwanted rays to be of value for most industrial applications.

In the "hot quartz" generator, ultra violet rays are produced by passing an electrical discharge through vaporized mercury. This is a practical method of producing waves with a specified wave length or frequency, but it is relatively inefficient because it involves the use of high current at high voltage.

Most commonly used ultra violet generators at present are those of the "cold quartz" type. They differ from "hot" generators in that their quartz discharge chambers contain ionizable gases such as argon to facilitate current



**INSPECTION.** Ultra violet rays show up "brown rot" in oranges at this California packing house.



**PRODUCTION.** Fluorescent color is applied to shoe tops by self-dispenser and perforated pattern (above). Embroidery machine operator easily follows the glowing pattern under adjustable black light fixture at the machine (below).



transmission. Since this minimizes electrical requirements, the generators operate at temperatures that rarely exceed 100° F.

#### Useful Testing Techniques

For industrial test purposes, ultra violet radiation is useful because of its ability to energize or activate fluorescent and phosphorescent materials. In the Zyglo process, for example, this characteristic makes it possible to observe minute surface cracks and other flaws that could not normally be seen in metallic and non-metallic products.

First, the article to be inspected is immersed in an oil-base fluorescent penetrant. Then the surface is cleaned so that the penetrant will be retained only by surface flaws, and the piece is examined under long-wave ultra violet radiation that causes the defects to glow brightly.

Quite frequently, quantities of fluorescent materials existing naturally in a product will permit the use of ultra violet radiation

for inspection purposes. Fruits and vegetables, for instance, develop layers of fluorescent substances if they are just beginning to spoil. This is normally invisible, but if examined under ultra violet rays, the deteriorating food products can be readily distinguished from the uncontaminated portion. Similarly, most minerals can be quickly and accurately identified by the different ways they glow under black light.

#### Other Methods

Fluorescent materials can also be incorporated in various products to facilitate testing with ultra violet equipment. One company now incorporates such additives in fungicidal varnishes, which are essential to the protection of electronic components in tropical areas, and the resultant glow of the applied coatings under radiation helps inspectors detect improperly finished parts.

Another firm incorporates fluorescent materials in liquid nylon to permit the use of radiation in locating dispersion leaks after the nylon is applied to alternate layers of rubber in fuel cells.

Since "invisible" smears of

glue on raw wood surfaces can spoil the appearance of transparent finish coatings, a furniture manufacturer now uses adhesives with fluorescent additives. This helps workers get rid of unwanted glue before the finishing is done, because the smears are easily observed under ultra violet rays.

Because certain coatings with fluorescent pigments cannot be seen in ordinary light, a number of concerns have found it practical to utilize "hidden labels". For example, by applying invisible data on vacuum tubes by this process, one company has found it possible to use ultra violet rays to determine whether tubes returned by retailers are defective as the result of rough handling or prolonged usage.

Still another firm uses invisible marks to identify parts that are rejected following batch tests. Since all incoming products are examined under ultra violet rays, this makes it easy to tell when some unscrupulous subcontractor includes past rejects in shipments of parts that are supposed to be new. It has been done.



"Now, there's a smart salesman! Calls me on the phone instead of spending half the morning in my office."



# "Boilerplate" Contract Clauses

A BUYER who has been issuing purchase orders under government contracts for several years recently received a phone call from one of his smaller vendors, asking him the meaning of the clause in the purchase order which read:

"Seller agrees to conform to all provisions of the Walsh-Healy Public Contracts Act."

"Er—well," replied the buyer, "I'm afraid you'll have to contact your lawyer on that. We're not permitted to interpret the provisions on our forms."

"Can't you give me a general idea?" asked the vendor. "Before I go to the trouble of having my lawyer look it over, just tell me whether it applies to the tax on gasoline, the slaughtering of hogs, labor rates, security, espionage, or what."

The buyer insisted that he couldn't discuss that phase of the order, and the phone call ended. A few minutes later he was at a desk in the legal department, asking what the Walsh-Healy Act was all about.

It is correct, of course, that normally a buyer should not give an interpretation of a legal statute, especially in writing. But it is his responsibility to know what is in the terms of his purchase order and what those terms mean, for they apply to both parties to the contract. It is a part of the buyer's job to set the terms of his contracts, and to operate within those terms. If his company has the benefit of a legal department, it is probable that the lawyers will draw them up for him. If he does it himself, often as not he may copy or adapt them from some other contract form that appeals to him, and they are quite properly subject to review by the company's legal counsel. Under some circumstances, as in the present case, they are mandatory clauses under his company's prime contract. The unfortunate tendency

is to regard such commonplace, standard "boilerplate" clauses as "safe" and therefore of little concern to the buyer.

But if the small-type "insurance policy" printing on the back of the purchase order form is of no concern to the buyer, how does he intend to administer the orders? All too often it is found that a buyer never looks at the back of the purchase order form until there is trouble on an order. then he is anxious to determine if he "has the vendor where he wants him".

Almost all special government contract laws specifically make them applicable to vendors and subcontractors, and in many cases require the prime contractor to police the vendor to make sure that he abides by the provisions of the law.

Thus, it is obvious that a general knowledge of the government contract clause requirements is a "Must" for everyone

concerned. Listed below is a brief summary of what is covered by the most commonly appearing clauses.

## Walsh-Healy Act

Generally speaking, this Act was designed to set forth the standards in regard to employees working for manufacturers doing work under government contracts. In substance, it has about the same purpose as the Fair Labor Standards Act, though it should be noted that the latter did not supersede the Walsh-Healy Public Contracts Act. Walsh-Healy was primarily written to cover employees whose firms might not otherwise be engaged in interstate commerce, and thereby not subject to other federal labor acts.

In particular, this Act sets forth the minimum wages that must be paid, the maximum hours allowable before overtime becomes necessary, and requires that em-

*The conditions on the back of the purchase order form are just as important as the information on its face. They can help or hurt the purchaser, especially where government orders are concerned*

By Robert J. Flynn

employees work under safe conditions. It also forbids the use of child labor and convict labor.

Not all subcontractors are automatically covered by the law, since they are affected only where they are normally engaged in manufacture of a type that is the same or similar to the end product under the prime contract.

Violators of this Act are subject to severe penalties which can include fines, cancellation of the contract, and being placed on a government contract blacklist.

The law specifically provides that no part of the contract will be performed nor will any of the materials, supplies, articles or equipment be manufactured or furnished under the contract under conditions other than those specified by the law. The burden of seeing that subcontractors conform is directly on the buyer.

#### **The "Kickback" Act**

This Act was passed to prevent the payment of gratuities or "kickbacks" by subcontractors in order to secure purchase orders on cost-type contracts. Generally, the law makes a determination that, had there been no kickback, the prices would have been equal to the amount actually paid less the amount of the kickbacks. This applies not only to subcontractors, but also to lower tier subcontractors.

As an example of how this works, in a recent criminal case it was shown that the sales manager of one subcontractor not only paid the prime contractor's buyer for obtaining orders, but also arranged with several other subcontractors to get them work provided they would put him on their payrolls as a consultant. He then split his "consulting fees" with the buyer. Everybody involved was convicted.

#### **Buy American Act**

This Act does not completely forbid the purchase of foreign materials or products, but rather sets forth a policy to be followed in the purchase of materials or products for public use.

Generally, the law states that only those unmanufactured articles, materials and supplies as have been mined or produced in

the United States, and only those manufactured articles made substantially from materials and supplies mined or produced in the United States, shall be purchased for public use. The law, however, takes into consideration the following limitations:

1. Where the price differential is excessive. In other words, the purpose of the Act is not to work a bonus arrangement for American manufacturers.

2. Where the items are not mined, produced or manufactured in the United States in sufficient quantity.

Another limitation on the law is found in cases where an item is developed abroad and needed here on a public project. For example, during the final stages of World War II, most of the jet engine development on the side of the Allies was carried on by England. When the postwar jet race began, the United States was far behind the others. As a result, an enormous number of jet parts had to be purchased from British manufacturers while American development continued. In many cases, aircraft and accessory firms negotiated licensing agreements with British firms and at the same time placed substantial orders for sufficient parts to carry them while they were tooling up under the license.

A prime contractor who innocently buys from a subcontractor materials which do not conform to the Buy American Act cannot force the government to take them. His only remedy is against the subcontractor. If the subcontractor has not agreed to conform to the requirements of the Act, it would appear that the prime contractor has no recourse.

#### **Employment of Aliens**

There is nothing in any law completely forbidding the employment of aliens. However, they may not work without prior permission of the proper representatives of the Defense Department on aircraft or aircraft accessory contracts, or on contracts classified as "Confidential" or higher.

#### **Anti-Discrimination**

Because of the constant battle going on in Congress concerning

the enactment of a Fair Employment Practices Bill, most of the regulations in this regard have stemmed from Executive orders.

The clause which forbids discrimination against any employee or applicant for employment because of race, creed, color, or national origin, generally includes a statement requiring that all subcontracts contain a provision imposing a like provision.

Presumably a failure to include and enforce such a clause could bring about cancellation of the prime contract. At best, failure would bring a censure of the prime contractor.

#### **Contract Termination**

Although the termination clause is substantially self-explanatory, there are a few points that should be noted.

First of all, a judgment obtained by a subcontractor against a prime contractor is an allowable cost in the prime contractor's termination claim only if the prime contractor included in his purchase order a clause substantially similar to that recommended in the Armed Services Procurement Regulations.

Many prime contractors have not only put in the standard subcontract termination clause as recommended, which provides that the subcontract can be terminated upon cancellation of the prime contract by the government. They have gone one step further, providing that the contract can be cancelled at any time by the buyer. This additional provision has caused a great deal of controversy in some quarters, since it would appear that a contract containing this provision would be lacking mutuality of obligation. That is to say, it would be a contract that the seller had to perform, but the buyer would not, and hence might not be a contract at all.

Another problem involved is that the standard subcontract termination article does not set forth the manner of disposition of inventory and does not bind the subcontractor to follow the rules of Section VIII. The only reason why subcontractors generally abide by these regulations is that

(Please turn to page 292)

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PURCHASING

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# Why a PURCHASING MANUAL?

By Paul F. Stolpman

**T**HE PURCHASING MANUAL, an approved text setting forth a company's purchasing policies, is a tool of Management, assuring that all personnel may have the means of acquainting themselves with those policies and may carry on their activities consistently in accordance with them. Existence of a manual implies that Management recognizes the value and essentiality and the specific responsibilities of the Purchasing Department, and stands behind its authority.

Within the Purchasing Department, the manual is a working tool, assuring orderly procedures, with an understanding of why these procedures are followed and how they fit in with general company aims and operations. It also provides a means whereby purchasing employees endowed with the spirit to get ahead have a departmental guide for study as well as for guidance. It can even be hoped that the manual will stimulate new ideas and suggestions that may assist those in authority in their continuing effort to improve and streamline the purchasing operation.

The physical format of the manual is important, not only with respect to its effectiveness as a working tool, but in the psychological impression it conveys. A permanently bound manual may give the impression of completeness, but also of inflexibility—of having established a policy from which no deviation will be tolerated, and in which no consideration will be given to changes or improvement. On the other hand, a standard ring binder is a tangible and practical indication that revisions, when advantageous, can easily be adopted. At Texas Gas Transmission Company we used the ring binder, and affirmed our

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attitude in the Foreword by emphasizing that revisions undoubtedly will be necessary from time to time, that suggestions will be welcomed, and that the ring type binder was selected to facilitate these changes.

In the physical make-up of our manual, we also used projecting visible index tabs for each section, making it convenient for reference and working use. The page numbering system is by sections, and numerically by pages in each section, so that additions or changes can easily be made without disturbing the over-all sequence.

## Topics Covered

The manual covers both purchasing and stores operations. The sections are as follows:

- I. Foreword.
- II. Organization.
- III. Contents.
- IV. Purchasing Department.
  1. Organization and Responsibilities.
  2. Purchasing Policies.
  3. Legal Aspects of Purchasing.
  4. Relationship to Other Departments.
  5. Relations with Vendors and Salesmen.
  6. Buying Proper Quality, Quantity and Price.
  7. Contracts.
  8. Surplus, Obsolete and Scrap Material.

9. Expediting Procedure.
10. Purchase Requisitions.
11. Request for Quotation.
12. Purchase Order.
13. Memo of Change.
14. Emergency Purchase Order.
15. Receiving Report.
16. Authorization Order.
17. Warehouse Requisition.
18. Miscellaneous.

## V. Stores Department.

1. Organization and Responsibilities.
2. Stores Policies.
3. Relationship to Other Departments.
4. Material Tally.
5. Requisition to Warehouse.
6. Warehouse Charge Ticket.
7. Warehouse Credit Ticket.
8. Warehouse Stock Cards.
9. Routing and Packing Ticket.

## Organization Is Clarified

A Purchasing Manual is by no means complete unless some space is devoted to the Purchasing Organization—a thorough description of the duties and responsibilities of each respective unit supervisor. Besides minimizing the confusion that is often caused by other departments contacting the wrong buyer or directing their inquiries for different types of information, such as invoicing, expediting, pricing, etc., to the wrong individual, a basis is established whereby members of the Purchasing Department themselves know exactly where they fit into the company's organization.

Friction can often be prevented by having the means of showing employees of other departments that a particular individual is not being "uncooperative", but rather that his job assignment either does not qualify or otherwise does not permit him to perform a particular phase of the purchasing function. Petty jealousies within the



## **FIRST with the paper making industry ...NIBROC® TOWELS**



American paper manufacturers—men who know paper best—put more Nibroc Towels in their washrooms than any other paper towel.

The same is true in business, industry and institutions all over the U. S.

- 1.** Nibroc Towels are tailor-made to fit your hands.
- 2.** Come from cabinet flat and ready to use instantly.
- 3.** Available in various sizes—in either white or tan.

**4.** Only with Nibroc—can you get the exclusive TAMP®, which slashes maintenance costs, ends washroom mess, reduces fire hazard. Packs *five times more* waste in receptacle.

**5.** Ask us to prove guaranteed savings with Nibroc "3-T Thrift Plan"—Towels, TAMP, Tissue. Lowest annual cost per employee.

**6.** See TAMP in action! Ask your dealer; he's listed under Paper Towels in the Yellow Pages. Or write Dept. GN-8, Brown Co., 150 Causeway St., Boston 14, Mass.



**NEW NIBROC TAMP . . .** Pull out towel. Step on pedal. Drop towel in chute. TAMP does the rest.

department likewise are minimized if job descriptions prevent overlapping authority. Last, but surely not least, is the availability of job information to those who wish to know the steps necessary to improve their abilities, or otherwise qualify themselves for advancement within the department.

The purchasing manual can be beneficial to all departments in that each department knows exactly what to expect from the Purchasing Department, and *vice versa*. Rather than engage in lengthy arguments over policy interpretation, it is merely necessary that the department in disagreement with a certain purchasing policy or procedure be referred to the specific section and page of the manual devoted to the subject in controversy.

### **Selling Other Departments**

Usually, other departments can be convinced of the interpretation of an established policy by merely consulting the manual. However, if and when the occasion requires, it may be considered desirable to rewrite a policy in terms acceptable, not only to the two departments involved, but to all departments of the company in general. In this respect, all department heads, supervisors, and various outlying stations are entitled to be kept informed of any revisions or changes in purchasing policy. Everyone who should be so advised, could not be advised properly if a company whose facilities are widely dispersed were content to rely on word-of-mouth communication. Some form of written policy is a "must". It is therefore wise to distribute a purchasing manual to all department heads and/or work locations. We prepared 100 copies of the manual for such distribution. Supplemental instructions, whether they be new or amended policies, are incorporated in new or revised sheets for the manual, and are directed to all supervisors to insure the revision becoming effective simultaneously and without exception.

### **Vendor Relations**

The purchasing manual should also take into consideration company relations with vendors and salesmen. This subject can become very controversial if the desires

of management are not clearly and emphatically stated. It is the specific duty of the Purchasing Department to interview or receive, so far as conditions will permit, all who call on a legitimate business mission. Sales representatives calling on the Purchasing Department are entitled to courteous treatment, and it should be made known to vendors and salesmen that if their efforts are directed to the Purchasing Department, they can expect a fair hearing regarding their product.

### **Centralize Vendor Contacts**

If the policy of interviewing salesmen is clearly spelled out in the manual, salesmen who direct their efforts toward Purchasing can feel confident that competitors are not obtaining an unfair advantage by soliciting requisitioning departments in an effort to restrict specifications or obtain a "prior commitment".

Management should be brought to realize that to relax or fail to adopt a well defined vendor policy may result in personnel in other departments, charged with engineering or other specific responsibilities, neglecting these duties by devoting valuable time to interviews and other activities not specifically included in their respective job classifications. Of course, at times it is necessary that departments other than purchasing have direct contact with a manufacturer or vendor. An exception to the general rule should be provided in the policy and stated in the manual for such cases.

### **Compiling the Manual**

A considerable portion of the manual is taken up with instructions for properly carrying out the usual procedures. We handled this by devoting a section to each of the major forms used in our procedure. These sections state (1) the purpose of the form, (2) its preparation, and (3) its distribution. A specimen copy of the form is shown, properly filled out for a representative transaction.

The purchasing agent who is given the assignment of preparing a purchasing manual has a man-sized, time-consuming job. Unless he has a definite basis to work from he will probably flounder

and despair. The Purchasing Agents Association of Louisville sponsors a library which has helped its membership in coping with this situation. Actual purchasing department manuals, from various companies, are included in this library, to guide and assist any member undertaking the preparation of a manual for his own company.

This does not mean that an existing manual can be adopted in its entirety. No two companies, even in the same industry, have exactly the same policies or procedures, are concerned with the same intracompany problems, or delegate purchasing authority the same way. But a manual that has been tested and is working in one organization can be a valuable guide in setting up a similar manual tailored to specific requirements.

### **An Example**

Texas Gas Transmission Corporation first became an operating company in 1948, when the Memphis Natural Gas Company and the Kentucky Natural Gas Corporation were merged into the present company. Since then, the company has been more or less constantly in the throes of recurring construction programs. With this growth came problems, such as the tripling of personnel, and the need to procure large quantities of construction and operational material efficiently and expeditiously.

The new personnel came from other gas and oil companies, as well as from non-related industries. They were accustomed to purchasing policies and procedures of these other organizations, which were not always the same as those of TGTC. There was further confusion from the assumption that policies established for construction programs were applicable also to operations, which was not always the case. This, coupled with the fact that the company operates in 9 states, from Texas to Ohio, gave rise to a definite need for written policies and procedures.

Under the supervision of H. F. Keith, Director of Purchases, manuals covering procurement for

(Please turn to page 282)



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## Thermal Resistance...Chemical Resistance!

### Now Available!

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Send today for fact sheets!

\*DuPont trademark for its polyester fiber

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Now, American, through its technical research, has perfected the mechanical interlocking of the man-made fibers listed at the left, to produce three-dimensional felt structures.

These new Felts by American have exceptional *chemical resistance* with *thermal stability* to 300 F. They are non-hygroscopic, biologically stable and are available in a complete range of thicknesses. Precision engineering assures close

density and thickness control.

The properties which characterize these new Felts are being utilized in filtration—laminated plastics as reinforcing material—high temperature bearing seals—gasketing. In fact, end uses are unlimited!

American's engineering and research staff is prepared to supply you with complete data and product recommendations. Write today!

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74 GLENVILLE ROAD GLENVILLE, CONN.

SALES OFFICES: New York, Boston, Chicago, Detroit, Cleveland, Rochester, Philadelphia, St. Louis, Atlanta, Greenville, S. C., Dallas, San Francisco, Los Angeles, Portland, San Diego, Seattle, Montreal.—PLANTS: Glenville, Conn.; Franklin, Mass.; Newburgh, N. Y.; Detroit, Mich.; Westerly, R. I.—ENGINEERING AND RESEARCH LABORATORIES: Glenville, Conn.

For More Information Circle No. 211 on Inquiry Card—Page 17

# GOOD JUDGMENT . . .

## Your Guide to Success

Results and approval depend upon the exercise of sound judgment. The faculty of judgment is usually acquired through experience. Experience frequently involves the painful process of making mistakes. Mistakes can be profitable if you learn from them.

*By Cason Rucker*

**T**HE RUGGED INDIVIDUALIST travels a lonesome and difficult road. He may be completely honest, and conscientious in following his own best judgment—and it is quite possible that his judgment is sound. He had better take what satisfaction he can from this, for it may be his only reward. The fact of the matter is that most of us, in one way or another, seem to be constantly working toward some one else's judgment and approval. A man courts a girl; a student works for a diploma or a grade; a mechanic strains to achieve the close tolerances of the designer's blueprint; an assistant strives for approbation and promotion; a salesman seeks an order.

When the rules follow a definite specification, it is relatively easy to win the desired approval. Proper training, with correct tools and earnest effort, will usually make the goal.

### **Reactions to Criticism**

When we get into the intangibles of judgment, it is harder. Judgment is the great variable. Often it is unpredictable. And it is well known that you can't please everybody.

A young sales trainee in a mer-

chandising firm spent several weeks preparing a sales catalog. It was his first big assignment, and he gave it the best that was in him. The deadline was met, and the catalog came off the press. The young man glowed with the satisfaction of a hard job well done.

His pleasant reverie was interrupted by the jangle of the phone. An acid voice inquired, "On page 26, McPherson, what happened to the umbrella sticks?"

Page 26 was devoted to beach umbrellas. Their vivid stripes and figures were shown in full color. In contrast, the long wooden poles common to all beach umbrellas were indicated by a straight black line. The chief buyer of outdoor equipment had checked the pages himself before they went to the printer. Now he had suddenly decided that sticks were required in the illustration. He wasn't really passing judgment on the entire catalog, but his reaction to that one page was so violent that he might as well have said, "What a poor job you have done!"

The youngster was heartbroken. He turned to the promotion manager under whom he was working and asked, "Why?" The understanding boss, who had been

in the game for many years grinned. "It's the theme song, son," he said. "You do a thousand things right and one that doesn't click, and that one thing is the cue for the anvil chorus. Forget it."

The trainee's first reaction was to scream, "Foul!"

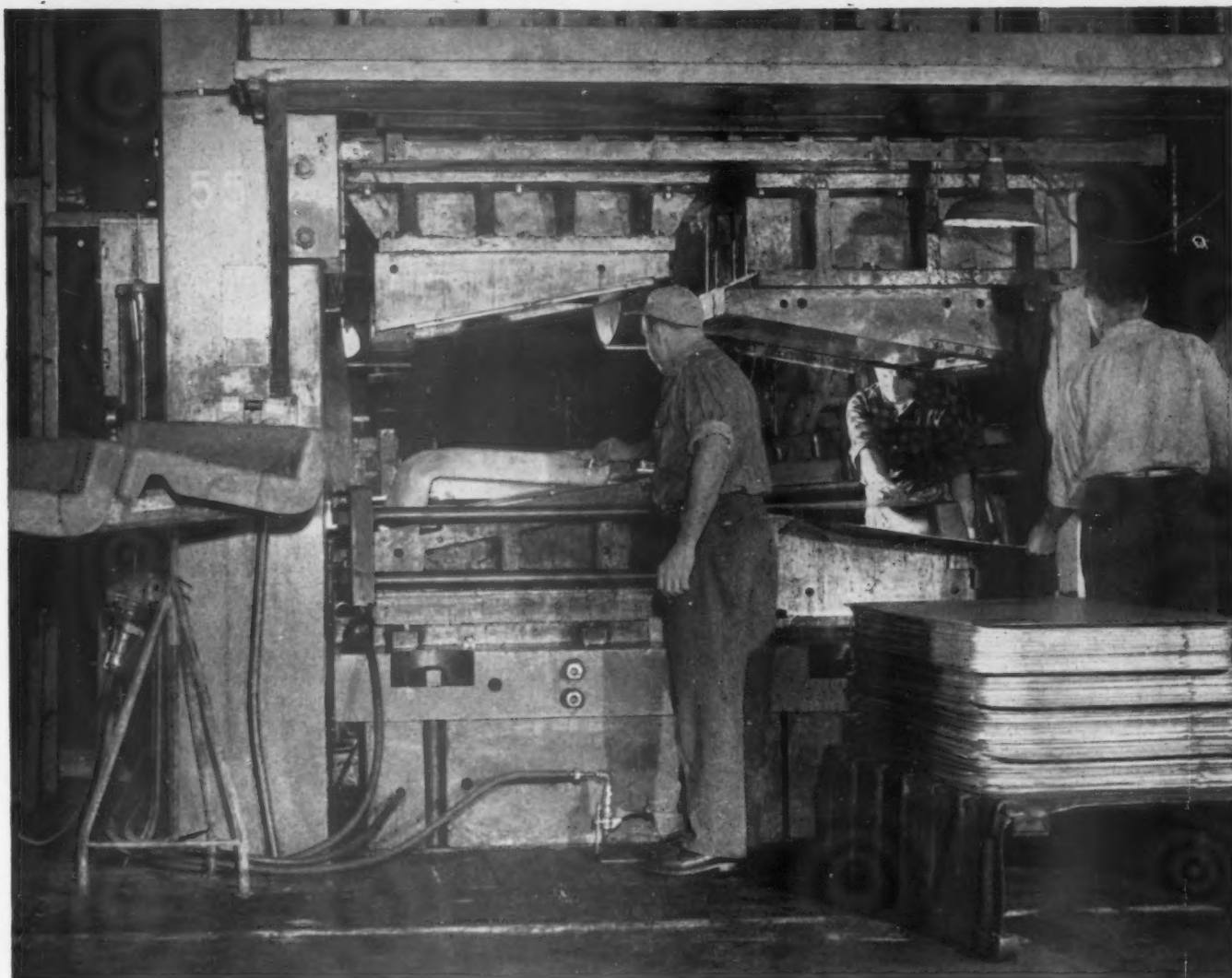
His second thought was, "To heck with it. Do it yourselves."

But the lasting result was to acknowledge the incident as a means of adding a layer of tough skin to ward off such barbs in the future. With the encouragement of his boss, he turned enthusiastically to tackle the next project. Meanwhile, the merchandising man promptly forgot his criticism after he had gotten it off his chest, and used the catalog as it was meant to be used—to sell umbrellas.

Many similar situations have been successfully faced since then by the realization that each case was merely a paraphrase of "What happened to the sticks?"

### **Thin Skin, Thick Skin?**

Thin-skinned persons are rarely in a position to exercise good judgment, because that requires objectivity and one who is on the defensive cannot think impar-



## *No wrinkles . . . no checks . . . no cracking*

Yes, Youngstown Sheets and Strip have exactly the right combination of tensile strength, ductility and surface finish to form perfectly in your presses.

And just as important, they have the uniformity of quality that enables you to run even the most difficult part hour after hour without jam-ups and with a minimum of rejects.

The Youngstown District Sales Office near you is there to help you. Get in touch with us whenever we can be of service.



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**COLD ROLLED  
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*Manufacturers of  
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MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE  
TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS**

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**AUGUST, 1956**

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tially. On the other hand, one must be sensitive enough to properly weigh all the factors involved in a difference of judgment. The well balanced individual accepts words for what they are, rather than as a personal criticism.

Small mistakes often should be forgotten as unworthy of mention in view of overall accomplishment. But try to learn from them before forgetting. It could save a lot of grief in the future.

Some years ago, while working in a warehouse, I got to know a big, husky truck driver. He had an argument with another driver and was forced to leave the company. He immediately found a better job elsewhere. Three years later I met him in a restaurant. He was doing very well, but the next hour was spent in heated justification of his original argument. It no longer made any difference to anyone, but still he had to relieve the cancer that was eating him. I had to hear him out. Apparently it meant more to him that he had lost face, that his judgment had been questioned, than that circumstances had kicked him up a step.

### **Can't Satisfy Everybody**

At the impressionable age of six I heard the old fable of the man, the boy, and the donkey. The man rode and the boy walked until bystanders criticized the father for being selfish. Then he walked and his son rode while hecklers chided the boy for letting his poor old father go on foot. In an effort to please, they then rode together, and were accused of being unfair to the donkey. In a last attempt to accommodate the sidewalk superintendents, they tied the donkey's feet together, hung him on a pole, and carried him between them. Crossing a bridge, they slipped; the donkey fell into the water and drowned. By trying to make everybody happy, they pleased no one and lost the donkey as well.

An able, hard working young man so well satisfied his employers that he rose to become head of a large retail store while still in his mid-thirties. He happened

to enjoy driving a flashy yellow convertible in the days before bright colors were commonplace in automobiles. In an accident, for which he was in no way at fault, he was killed. Did anyone mention how hard he had worked or what a good job he had done? No. The general comment was: "What else could you expect of a man sporting around in a yellow convertible?" His sound business accomplishments were ignored because he had dared to be "different" in his private life.

A ruthless, ambitious executive ignored popular opinion until he made his million. Having won his goal, he hired a public relations counsel to humanize him and his record. This same man, who was often severely criticized on the way up, is now warmly praised for the fine company he built and for his present good works.

### **Judgment or Agreement?**

The son of an influential man went to work for an old friend of his father's in another city. It was his first time away from home, and his new-found freedom went to his head. His desk and job were the least important things in his scheme of life. After six months the father wrote to his old friend, asking how the boy was doing. Reluctantly but honestly, the employer told the truth and so lost the friendship of both father and son. The father did not want the truth; he only wanted to be told what a wonderful son he had.

In business one is sometimes called upon to take sides in a family dispute. In such a case, the best judgment would probably suggest taking the first train out of town, because your opinion is not wanted as an honest opinion or on the basis of objective judgment.

A particularly tough job in a corporation is to keep going on a chosen course when there is no expressed reaction at all from above. You don't know for sure whether your course is right, and whether the self-imposed tunnel through which you grope in the dark will lead to broad daylight some steps ahead or to a black

pit and a new job. All you know is that you are working hard, leaning entirely on your own judgment. One cynical definition tells us that "If it works, it's good judgment; if it doesn't, judgment is poor."

Many men are unable or unwilling to challenge this definition. Their initiative is dulled, and they lose confidence in their own judgment. Consequently they are careful to stay safely within their prescribed bounds. They circulate cautiously through the organization, seeking assurance that their position is safe.

Is this altogether bad? The experts now say that the most desirable employee is the one who gets along best with his co-workers. So, whose judgment is right? Perhaps it's "Mr. In-Between." But that course sets up conformity, not judgment, as the goal.

### **Improving Judgment**

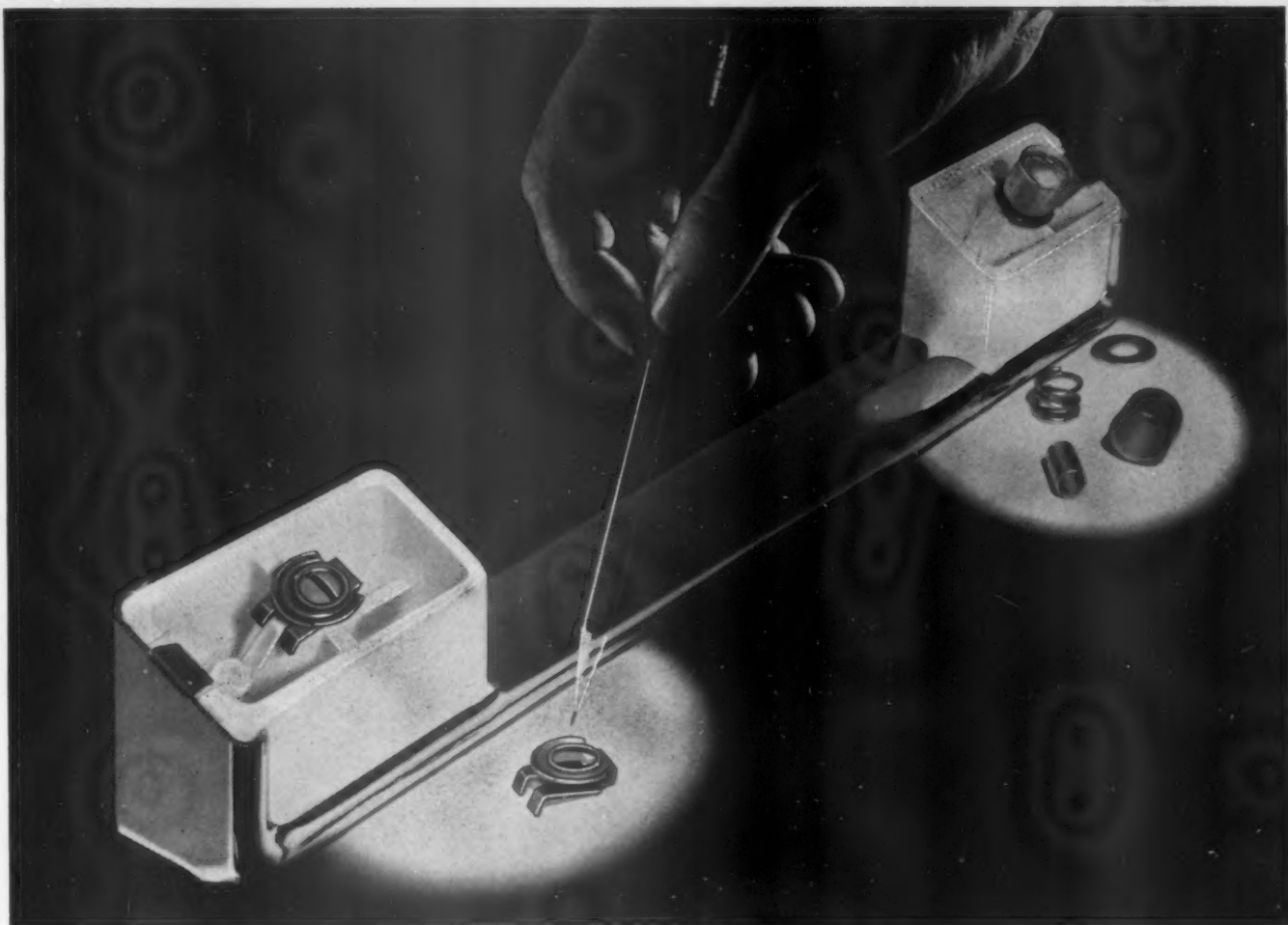
It is impossible to expect that one's judgment will always be correct. Yet, if a man has consistently good judgment and pursues his course with integrity and thoughtfulness, he will usually find a receptive audience for his considered judgments. This is certainly true for the "repeat salesman, whose basic honesty is actually the most important thing he has to offer, and for the purchasing agent, who must consider the interests of all other departments, and of the company as a whole, in all his decisions.

And judgment can be cultivated and improved.

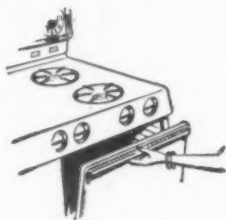
Many of us have had the experience of wrestling with a difficult problem that we cannot seem to solve. We have the facts, but they do not mesh. Mentally exhausted, we go to sleep hoping to put it out of mind temporarily, so that we can attack it with a "fresh" mind the next day. Then suddenly we awake with a start, and the solution has presented itself as we slept.

Of course this doesn't mean that we should table all decisions, nor that this is the painless, infallible way to good judgment. The psychologists tell us that the subconscious mind, if properly stimulated, will produce wonders. That stimulus is the intense men-

(Please turn to page 280)



**Engineered by Tinnerman...**  
**One-Piece SPEED CLIP® replaces 4-part fastener,**  
**helps assembly and shipping ... and saves money!**



Four separate parts plus screw were required to fasten each end of the removable door handles on kitchen ranges manufactured by the Caloric Appliance Corporation, Topton, Pennsylvania.

Tinnerman fastening specialists teamed up with Caloric designers to eliminate 3 of the parts!

Now . . . a special one-piece, multi-purpose SPEED CLIP plus screw do the same job more efficiently and at lower cost, and reduce small parts handling. Faster, easier assembly . . . fewer parts to buy, inventory and handle. Packed

inside the oven for safe shipment with SPEED CLIPS in place, the door handles are dealer-applied in far less time, can be easily removed by the housewife for cleaning.

The resiliency of the spring steel SPEED CLIP prevents crazing or chipping, enables it to absorb varying panel thicknesses and porcelain enamel build-up. Changeover was made without retooling or redesigning door handle or keyhole-shape mounting holes.

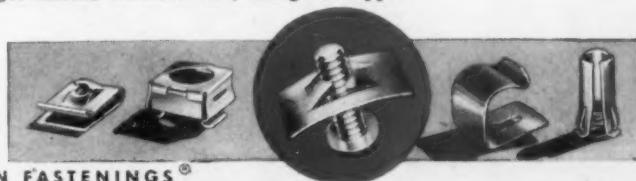
Find out now where SPEED NUT brand fasteners belong on your assembly line. There are more than 8000 variations to choose from. Call your Tinnerman representative for complete details and write for our Fastening Analysis Bulletin No. 336.

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**TINNERMAN**

***Speed Nuts***

**FASTEST THING IN FASTENINGS®**



# ideas

you can use

## TRAVELING SEMINARS:

### Bring Vendor Know-How to Your Plant

**P**LANT visits have long been a source of information to the purchasing agent. New Departure Division of General Motors Corp., Bristol, Connecticut, recognizes this and also is aware that because of the distances involved, many people who would like to, are not always able to visit vendor plants. The cost of having everyone who

is interested in a particular plant or product visit that plant would be substantial, so, General Motors is bringing the plant to the visitor.

New Departure is currently conducting "Ball Bearing Seminars" in various parts of the country to help overcome this problem. The seminars usually last from two to two and a half hours and

are held: a) at a General Motors Training Center, b) the customer's own plant, c) or in a local hotel.

The program is organized into three parts. First is a film presentation, second is a talk on specific ball bearing applications, and thirdly, a panel discussion. By the use of slides and movies, those in attendance can observe the operations involved in manufacturing ball bearings at ND. It is here that the "visitors" get a good idea of what the New Departure plants are really like. Most of the numerous departments are shown, as well as the extremely important and modern laboratories.

Just as when you visit the plant, an engineer is called in to discuss your particular problems.

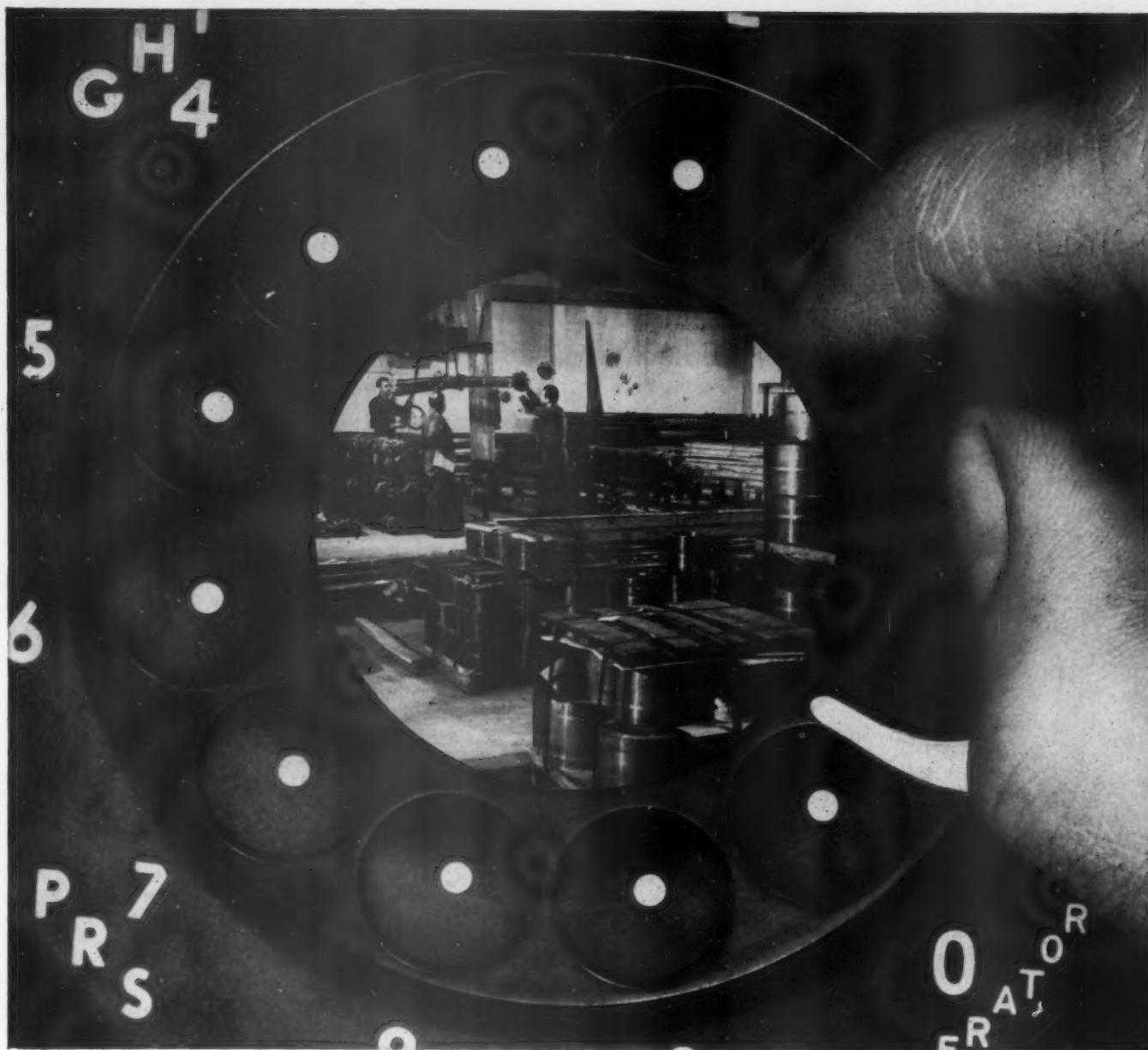
His talk is then followed by a panel discussion among bearing application engineers in the uses of ball bearings. Since there are so many varied applications or uses for ball bearings, the engineers, who specialize in certain phases, are of extreme value to the seminar. Questions that require lengthy or complicated an-

(Please turn to page 134)

New Departure station wagons bring samples of company products, special displays, and everything else necessary to make the seminar an excellent substitute for a vendor plant visit.







## Dial BRIDGEPORT for custom warehouse service

When you dial a Bridgeport Warehouse for copper, brass or bronze, you're on the road to inventory economy and production efficiency. You profit immediately because your own inventory can be more flexible. Rely on Bridgeport's complete stock of popular sizes of strip, rod, tube and wire—always available for quick delivery.

And, Bridgeport custom warehouse service has additional advantages:

- **Customer-First Service** from Bridgeport sales representatives, whose job is to give you the best in products and prompt delivery.

- **Production-Matched Material** . . . brass, bronze or copper strip—from our

stocks or yours—slit to order for immediate use.

- **Technical Service** advice on production or material questions. The full experience of Bridgeport's metallurgists and engineers is always at your service through your local Bridgeport Sales Office or Warehouse.

Let Bridgeport show you how custom warehouse service can help increase your production and lower costs. Your nearest Bridgeport Sales Office will arrange for prompt warehouse shipments, or direct service from our mills. Write or phone today.


Brass • Copper • Bronze • Strip • Rod • Wire  
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### WAREHOUSES AND SALES OFFICES:

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|---------------------|-----------------------|
| Chicago, Ill.       | Newark, N. J.         |
| Cleveland, Ohio     | New York, N. Y.       |
| Denver, Colo.       | Philadelphia, Pa.     |
| Los Angeles, Calif. | Providence, R. I.     |
| Minneapolis, Minn.  | San Francisco, Calif. |
|                     | St. Louis, Mo.        |

### DISTRICT SALES OFFICES:

|                     |                   |
|---------------------|-------------------|
| Akron, Ohio         | Kansas City, Mo.  |
| Atlanta, Ga.        | Miami, Fla.       |
| Boston, Mass.       | Milwaukee, Wis.   |
| Bridgeport, Conn.   | Pittsburgh, Pa.   |
| Cincinnati, Ohio    | Richmond, Va.     |
| Dallas, Texas       | Rochester, N. Y.  |
| Dayton, Ohio        | Rockford, Ill.    |
| Detroit, Mich.      | St. Paul, Minn.   |
| Grand Rapids, Mich. | Seattle, Wash.    |
| Houston, Texas      | Tulsa, Okla.      |
| Indianapolis, Ind.  | Washington, D. C. |

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For More Information Circle No. 214 on Inquiry Card—Page 17

# Cylindrical Roller Bearing Retainers . . .



**The seven basic types in current use . . .  
their influence on bearing cost and  
performance . . . why one type is best suited  
to your individual design requirements**

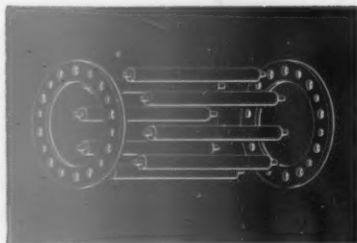
Most cylindrical roller bearings consist of an inner race, an outer race, a complement of rollers, and a cage or separator which locates and guides the rollers. There are significant differences in the design and construction of these roller retainers. (The word "retainer" is used to designate both a cage, which retains the rollers, and a separator which only spaces the rollers.) Some retainers are simple and economical, well adapted for volume production, and designed for use where price is a primary consideration. Others are more costly to make but are designed for improved roller guidance, to insure cooler or smoother operation, or to provide longer life in heavy duty service.

Beginning with the most elementary, here are the seven basic types of cylindrical roller bearing retainers in current use, with a brief outline of their construction and characteristics:

## 1. TRUNNIONED ROLLER CAGE

The trunnioned roller cage is used for bearings of very thin annulus, where the rollers must be small in diameter, closely spaced, and relatively long. The end rings are economical hardened steel stampings, into which the trunnioned rollers are inserted. The bars which connect the end rings are riveted to the rings at assembly so that the rollers and cage form an integral, non-separable unit. Thus,

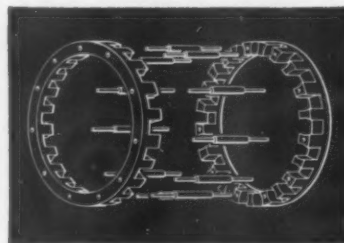
outer or inner races can be omitted if desired, with rollers operating directly on a suitably hardened shaft or housing bore. This cage is an economical design for volume production and possesses excellent operating characteristics for a wide range of applications.



## 2. POCKETED END RING CAGE

The pocketed end ring cage is restricted to fairly large bore bearings with relatively long rollers. The end rings are bronze. The steel connecting bars are riveted into the end rings and the rollers operate in drilled pockets which guide them accurately. The construction has less tendency to twist or rack, and operates with less end friction because the outside faces of the bronze

end rings are smooth uninterrupted surfaces. This type is known as a roller-riding cage, and makes no contact with the bearing races. It can be produced economically in small lots and since it is non-separable, bearing races can be omitted if desired. The characteristics of the



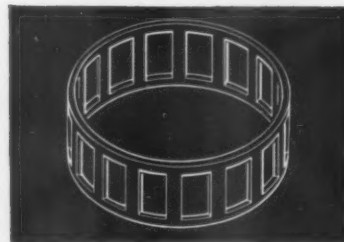
pocketed end ring cage make it particularly desirable for applications where long life and heavy-duty service are required.

## 3. STAMPED STEEL SEPARATOR

The stamped steel separator does not retain the rollers by itself, but merely separates them. It is a one-piece steel stamping with the separating bars coined to conform to the roller contour,

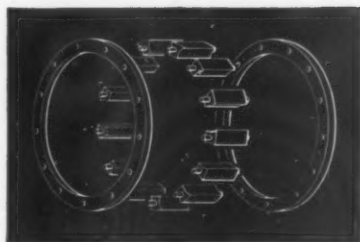
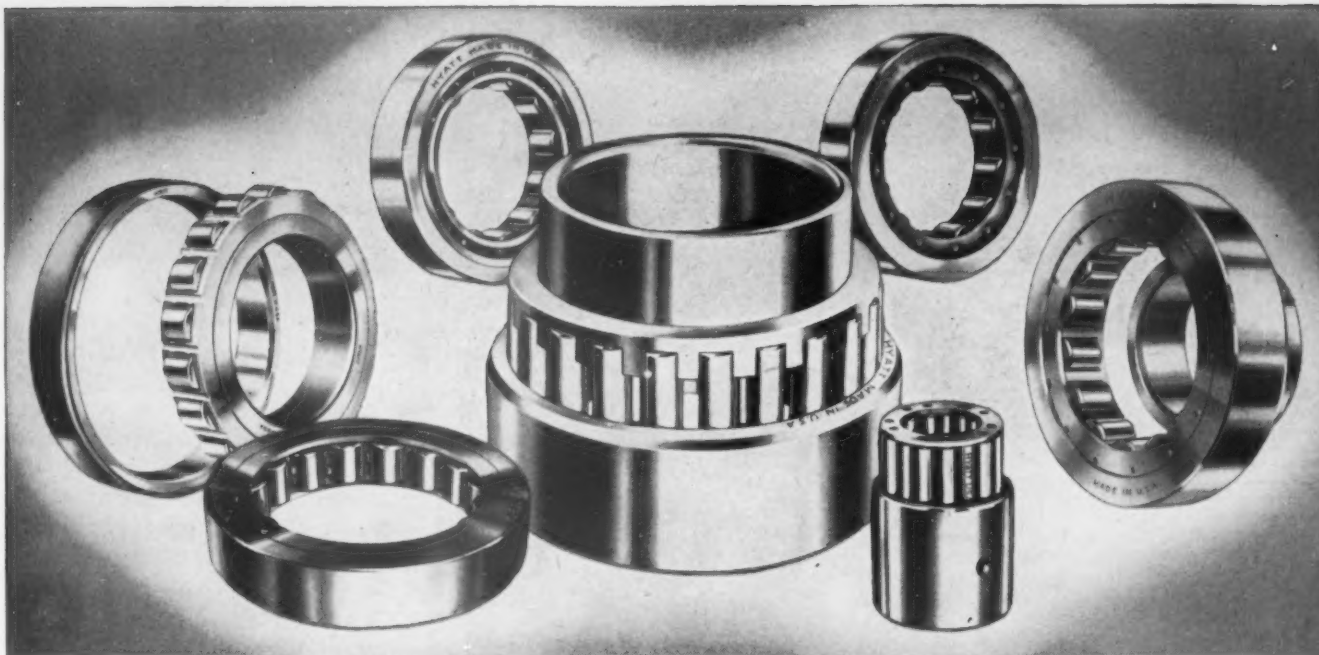
and rides the rollers below their pitch line. Rollers are guided by the race flanges and snap rings, in conjunction with the cage bars. The simple, open design of this separator insures large grease capacity and good lubricant circulation, rendering it relatively insensitive to dirt. Since

the separator is retained axially by the roller ends, there is no external requirement for axial location. The stamped steel separator is usable throughout a wide range of bearing sizes where rollers are relatively short (the Hyatt Hy-load series), and is economical for volume production.



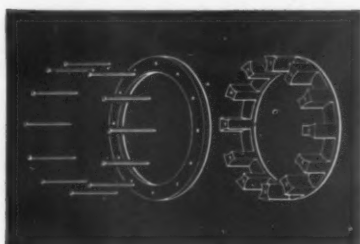
## 4. FORMED BAR CAGE

The formed bar cage is built up of stamped end rings and bars formed to the roller contour. The end rings and bars are riveted together at assembly, making the race and roller assembly a non-separable unit. This cage is used on Hy-load bearings, with double-flanged inner or outer races. This



## 5. DRILLED POCKET CAGE

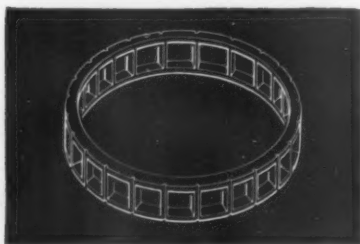
To construct this type, a bronze cylinder is drilled and reamed to form pockets in which the rollers operate. After the rollers are inserted, a flat end ring is riveted in place so that the



rollers are permanently retained in the cage. This design provides extremely close control of the rollers in operation and prevents skewing which would impair both the thrust and radial capacity of the bearing. This is another roller-riding cage comprising a non-separable unit suitable for operation with inner or outer races omitted. The design insures superior performance and is used in applications requiring bearings of better than commercial quality.

## 6. SEPARABLE BROACHED POCKET CAGE

This type is used only on the finest-quality bearings where performance is more important than price. It is made of one integral bronze cylinder, with pockets broached for maximum uniformity. This is the preferred type for the finest high-speed precision bearings because it insures minimum friction between rollers and separator, and allows better oil circulation for cooling at high speeds. Moreover, there are no thermal differences in this monolithic

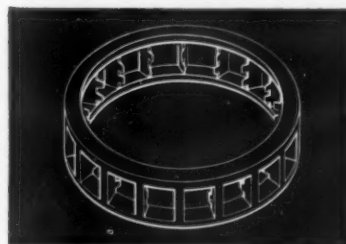


design insures quiet operation, better roller guidance, and provides a smooth contact surface between bars and rollers. This is a roller-riding design requiring no race contact in operation and is well adapted for volume production.

construction; the entire unit heats and cools uniformly. The separable feature offers the further advantage of roller removal for inspection of the race operating surfaces.

## 7. NON-SEPARABLE BROACHED POCKET CAGE

Similar in construction to the above, this design offers all the same inherent operating advantages. It is used in bearings where installation must be "blind," requiring rollers to be retained with the inner or outer race. Controlled roller drop is provided by deforming the connecting bars at assembly after the rollers are in place in the cage. This insures proper retainment but has the disadvantage that the bearing cannot be taken apart for inspection.



**HYATT MANUFACTURES ALL SEVEN TYPES** of cylindrical roller bearing retainers described above —each the finest of its type. You will find more details in HYATT General Catalog No. 150, or your nearby HYATT Sales engineer will be glad to help you choose the type best suited to your individual design requirements. Remember, HYATT is America's *first* and *foremost* maker of cylindrical roller bearings. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



# HYATT

## ROLLER BEARINGS





## WHAT'S WRONG?

The spring buyer did not nail down the specifications. Spring suppliers are interpreting the specs differently.

Supplier A, quoting \$62.15, noted that several specified tolerances were beyond machine capabilities and could only be obtained by using special, costly methods. Believing that the spring was "over specified," he quoted to "common sense" tolerances, not to the questionable tolerances specified.

Supplier B, quoting \$74.30, noted the too-tight tolerances and also recognized that, in packaging, tangling would present a costly assembly problem. Without taking explicit exception, he decided to quote to more realistic tolerances and also decided to include the cost of special packaging.

Supplier C, quoting \$139.40, quoted *exactly to specs*, figured on using special methods and specialized inspection to meet specs, and special packaging to avoid tangling. He offered several engineering suggestions for cost reduction which, if accepted, would have made him competitive with Supplier B.

Which is the best bid? This depends on whether or not the tolerances specified were necessary and complete.

When purchasing springs, here are some good rules to follow: (1) specify tolerances realistically; (2) include all pertinent information; (3) insist on conformance to specifications (a supplier's Quality Report is a good way to check this); and encourage your spring supplier to offer suggested changes to the specs in the interests of economy. By doing so, quotations like these and "quality headaches" can be avoided.

Write for information on spring buying.

Every shipment of parts supplied by Hunter automatically includes a Quality Report on tested characteristics.

**HUNTER**

**HUNTER SPRING COMPANY**

15 Spring Avenue, Lansdale, Pennsylvania

(near Philadelphia)

SPRINGS • STAMPINGS • TEST APPARATUS

For More Information Circle No. 216 on Inquiry Card—Page 17

ideas

(Continued from page 130)

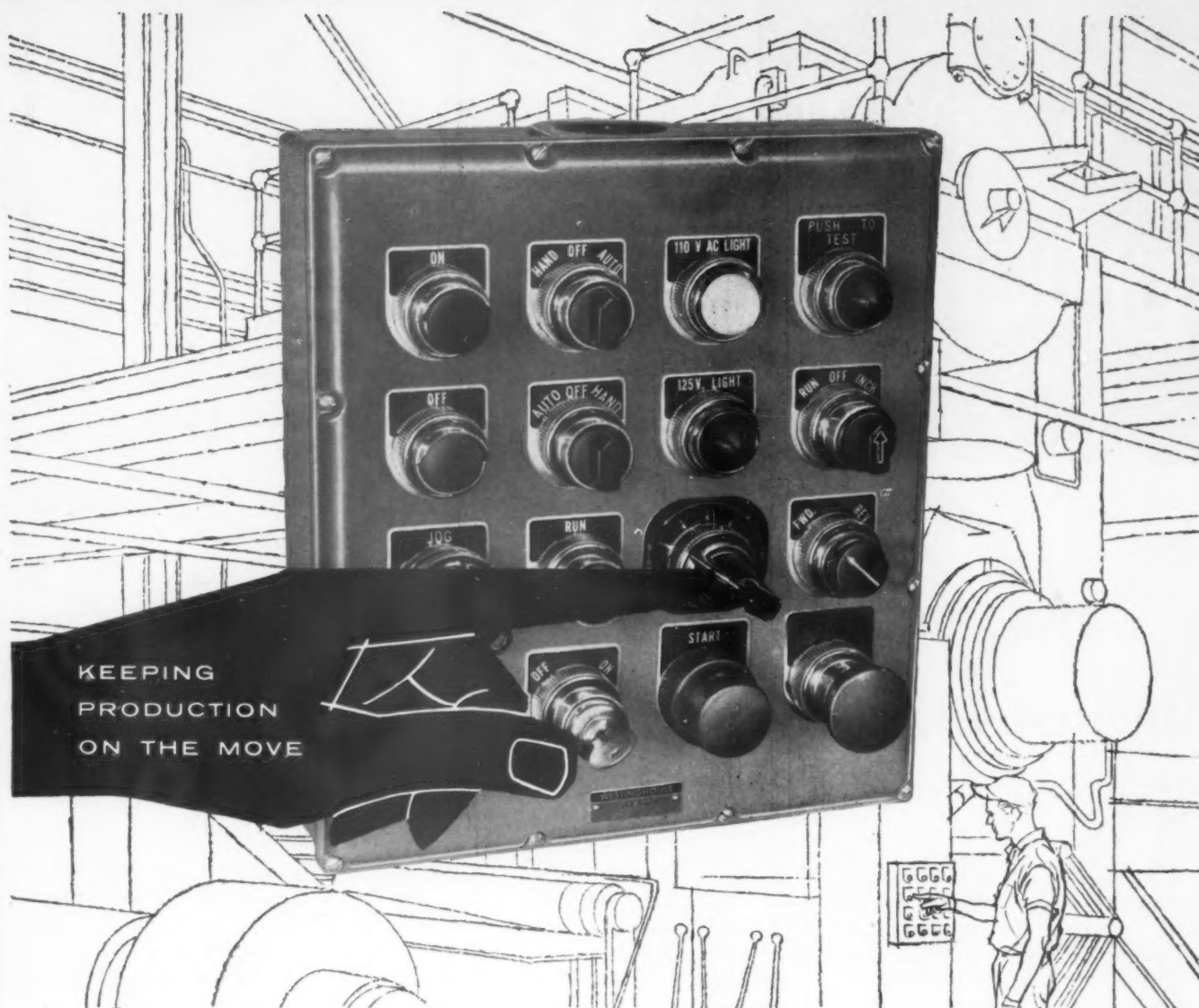
swers are submitted in writing. Full and complete answers are sent later from the Bristol headquarters.

A meeting of this type affords an excellent opportunity for the purchasing agent to get together those involved in the value analysis and standardization programs within his company. A recent successful seminar was held at the Piasecki Helicopter Corp. plant in Morton, Pennsylvania. Some of those attending from Piasecki were the purchasing agent, value analyst, factory manager, buyer, designer and chief engineer. Acting as liaison between the vendor and engineering or using departments, a purchasing agent provides some of his most valuable assistance to the efficient and profitable operations of the company.

Recommendations for seminars generally originate with New Departure field representatives during visits with customers. If the company is not large enough to require a seminar of its own one can be arranged in conjunction with other companies in the same geographical areas who have similar bearing problems.

### Mobile Access Lift For Use Indoors or Out

Designed for maximum reach up to 42" above floor level, a hydraulically-operated lift emphasizes ease of positioning, speed of elevation and safety. It can be used indoors or out and is easily transported from one location to another. It folds up to pass through doorways, narrow corridors and in and out of elevators. Maximum stability is assured by screw type leveling jacks at each corner to hold the lift in a steady, level position. Pushbutton control on the platform's guardrail lowers or raises the lift. Manufacturer is The Ballymore Co., Wayne, Pa.



## ... with Westinghouse Oil-Tite control stations—1 to 16 units

**Interchangeable parts** — stations, contact blocks, operators and indicating lights — right off the shelf, quickly give you a "tailor-made" Westinghouse Oil-Tite\* control station to meet the requirements of any heavy-duty industrial equipment application.

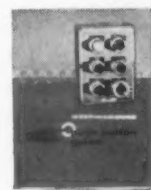
**Enclosures** — die-cast and Bonderized — include cork-neoprene gasketing and close machine fits as positive seals against exposure to oil, coolants,

\*Trade-Mark

cutting compounds, water and other foreign matter.

### New Pushbutton Guide

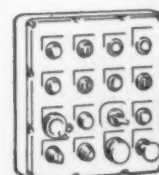
For more facts on why it will pay you to standardize with Westinghouse control stations, get a free copy of the new *Pushbutton Guide*, booklet B-6749. See your nearby Westinghouse salesman or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-30210



## **WATCH WESTINGHOUSE!**

**WHERE BIG THINGS ARE HAPPENING FOR YOU!**

THERE'S A WESTINGHOUSE PUSHBUTTON  
TO MEET EVERY APPLICATION NEED!



# new products

**and cost-saving ideas**

## Two Bales of Scrap per Minute—*Automatically*

A high-speed scrap baling press utilizes automatic weighing equipment for proportioning and feeding exact amounts of scrap into the press.

The baling press, manufactured by Harris Foundry and Machine Co., Cordele, Ga., automatically receives scrap, transfers it to a press chamber where it is compressed into an 8" cube, then ejects it onto a delivery conveyor. It will handle a wide range of ferrous and non-ferrous scrap materials, including sheet clippings and skeleton scrap resulting from stamping, punch and trimming operations.

Recently, automatic weighing equipment, manufactured by Richardson Scale Co., Clifton, New Jersey, was incorporated into the processing line. It is reported that this is the first time such equipment has been used for weighing and feeding scrap to a Harris baling press.

When size and weight of the finished bale are an important factor to the scrap processor, the automatic scale offers two important advantages: 1) by feeding identical weighings of scrap into

the baler for each baling cycle, users of the press have close control; 2) high-speed feeding of scrap to the baler is automatically controlled by the Richardson scale, which is electrically interlocked with both the press and the feed belt conveyor for a fully synchronized operation.

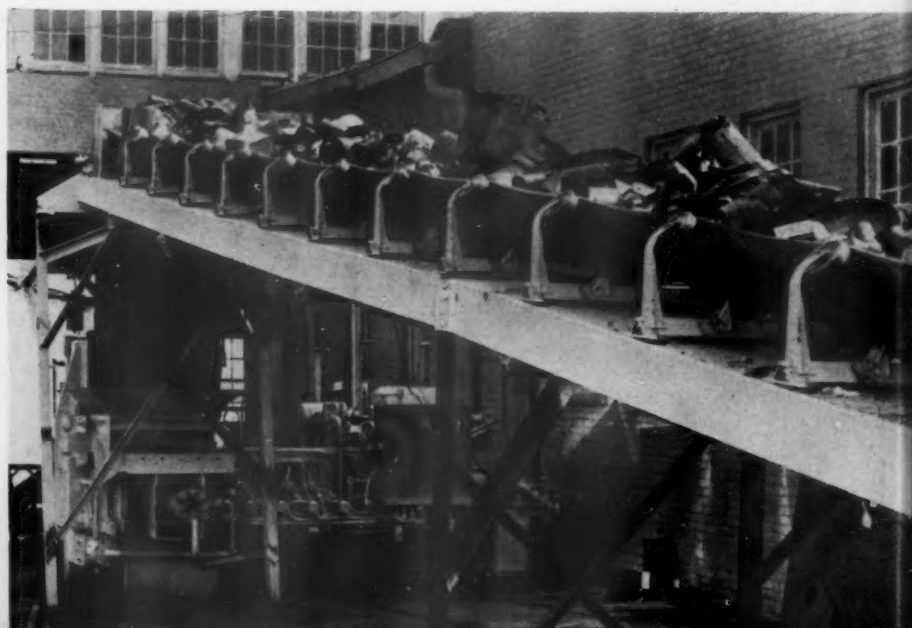
Scrap is fed onto an inclined continuous belt conveyor, which delivers scrap to the Richardson scale. Normally the scale is set for 50-lb. weighings, although this

may be adjusted to allow for different scrap materials and different bale sizes.

As the 50-lb. weighing is reached, an interlocking micro-switch stops the feed belt. The scale then holds the load until the press' loading chamber opens, ready to receive the scrap. This activates a solenoid discharge on the scale, which opens hopper doors and discharges scrap to the

(Please turn to page 140)

For More Information Circle No. 218  
on Inquiry Card—Page 17→





# "Same Day" Shipment

from Ex-Cell-O's huge stock of precision

## Drill Jig Bushings

Whatever your requirements, Ex-Cell-O's complete bushing service will give you full satisfaction with every order! For your convenience, Ex-Cell-O maintains huge stocks of precision Drill Jig Bushings, and efficient expediting facilities which make possible "same day" shipment. This means orders are filled and dispatched from complete inventories in New York, Detroit, Los Angeles and London, Ontario, within a few hours after they are received!

Made of wear-resistant bearing steel, Ex-Cell-O Drill Jig Bushings are precision ma-

chined to meet Ex-Cell-O's rigid quality standards. Ex-Cell-O's exclusive hardening process produces bushings guaranteed uniform within 62-64 Rockwell "C". All Ex-Cell-O bushings are heat treated in Ex-Cell-O's atmosphere-controlled equipment. You can count on the tested and proved superiority of these high chrome, high carbon, oil hardening bearing steel bushings.

Call, wire or write Ex-Cell-O for the world's finest, fastest and most complete bushing service!

For your engineering and purchasing files: The complete Bushing Guide. Pictures and describes A.S.A. standard bushings, lists hundreds of Ex-Cell-O bushings available from stock. Write for as many copies as you need.



1. Headless Press Fit Bushings are used when center distances are too close for bushings with heads. 2. Head Liners are used (in place of headless liners) when excessive pounding is involved. 3. Fixed Renewable Bushings are used with liners when replacement bushings are required during the life of the jig. 4. Slip Renewable Bushings are used with liners when two or more operations require change. 5. Headless Liners are pressed permanently into the jig plate for accurate replacement of renewable drill bushings. 6. Head Press Fit Bushings are used when bushing replacement is not required during the life of the jig.

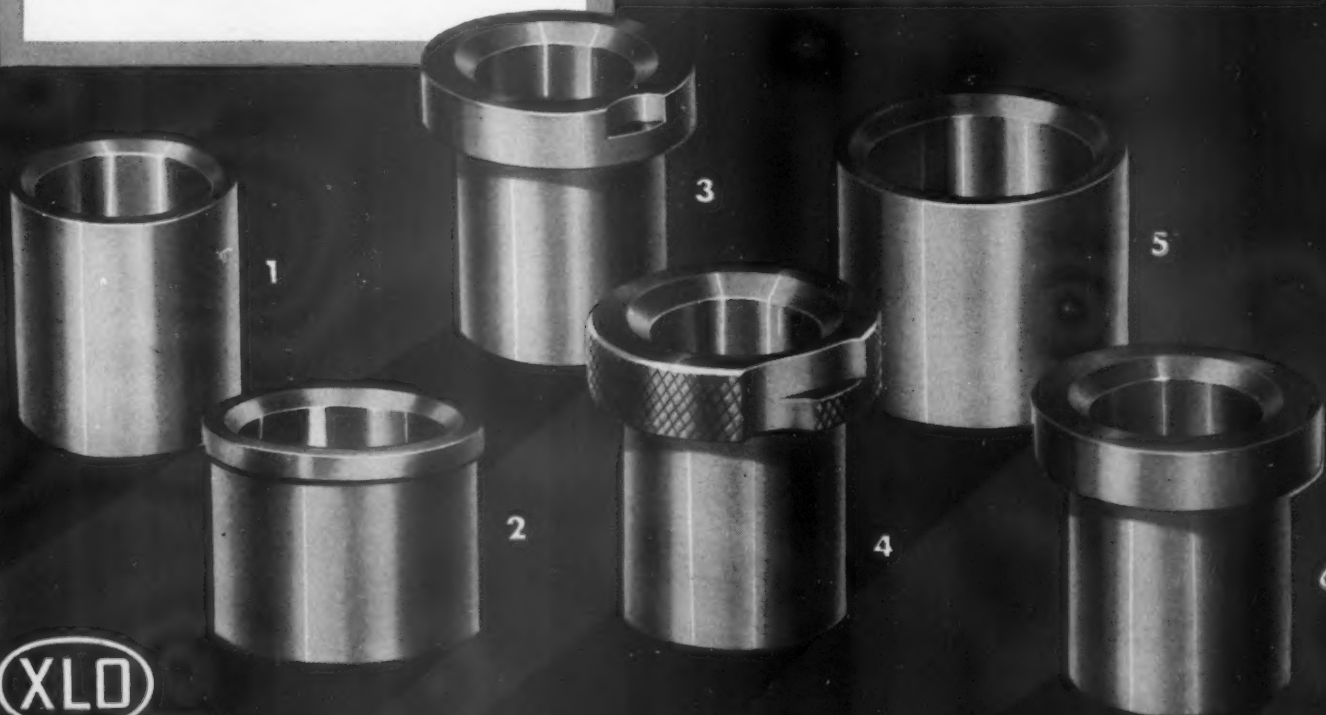
## EX-CELL-O

### CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES  
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS  
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

56-12



# NOW—PRECISION-MADE

## Unique Optical Comparator Assures Accurate

As the first to apply the technique of micrometric projection to the manufacture of wire screen cloth, Hewitt-Robins can now meet the most exacting specifications every time. With the use of this Optical Comparator, an unusually high degree of accuracy can be obtained because all measurements and comparisons are made on a greatly enlarged image rather than on the object itself. There is no direct contact with any part nor can there be any deformity caused from measuring pressure.

The actual wire sample is projected on a master chart with such magnification that the operator can instantly see and correct the smallest variation in the specified crimp. As a result, the crimping machine can be adjusted to three decimal places to obtain maximum uniformity of product.

This is one more special Hewitt-Robins technique for assuring you the finest in wire screen cloth for every sizing, separating or screening operation. Hewitt-Robins wire screen cloth is tougher . . . resists extreme abrasion . . . lasts longer. Every piece is tightly woven with precisely accurate openings and will provide you with higher operating efficiency and lowest cost per ton.

Hewitt-Robins screen cloth is obtainable in a wide variety of weaves in plain steel, spring steel, oil-tempered steel, stainless steel and many other alloys . . . is carried in stock in both Super and Gyaloy grades, 3/16" openings and coarser.

### INDUSTRIAL DIVISIONS PRODUCTS

INDUSTRIAL HOSE • VIBRATING CONVEYORS  
CONVEYOR BELTING • CONVEYOR MACHINERY  
VIBRATING SCREENS • DESIGN, MANUFACTURE,  
ENGINEERING AND ERECTION OF  
COMPLETE BULK MATERIALS HANDLING SYSTEMS  
"JONES" POWER TRANSMISSION EQUIPMENT  
"GLIDE RIDE" THE NEW MOVING SIDEWALK



# HEWITT-R

STAMFORD; NN

PURCHASING

# SCREEN CLOTH

## Quality Control

New Optical Comparator for testing the crimp of wire screen cloth compares samples with master chart. Projected image has been magnified 10 times for precision comparison by D. K. Wallace, Superintendent of Hewitt-Robins Square Mesh Department.



# HEWITT-ROBINS

BRIDGEPORT, CONNECTICUT

ASING

AUGUST, 1956

## HEWITT-ROBINS VIBRATING SCREENS

Hewitt-Robins Vibrating Screens are manufactured in a variety of styles and a wide range of sizes for every need of industry.

### GYREX SCREENS

General-purpose, positive-stroke, 4-bearing screen with amazing versatility of application and an unsurpassed record for stamina in service.

### STYLES M AND MS VIBREX SCREENS

Full-floating, unbalanced, pulley-type, 2-bearing screen. Offers sharp sizing of a wide variety of materials at low cost.

### STYLE J VIBREX SCREENS

General-purpose screen applicable to a wide variety of screening operations. Wide range of sizes for suspended mounting.

### STYLE HS HIGH-SPEED VIBREX

For fine screening operations (up to 100-mesh in some cases). Highly effective circle-throw screening action.

### ELIPTEX SCREENS

Exclusive 3-way elliptical motion for sharpest sizing and most effective dewatering. Horizontal-operating flat screens.

### HI-G SCREENS

Revolutionary new "modified resonance" principle permits larger screens and bigger capacities at less power. Unusually sharp screening action. Can be made in sizes larger than any other vibrating screen on the market.

FOR SERVICE AND INFORMATION  
ON BELTING AND HOSE  
CALL YOUR LOCAL HEWITT-ROBINS  
INDUSTRIAL SUPPLY DISTRIBUTOR  
LISTED IN THE "YELLOW PAGES"



For More Information Circle No. 219 on Inquiry Card—Page 17



**Crampons prevent slipping  
on mountain ice, but**



*Pattern one-half actual size*

**every step is a SAFE step  
on low cost**

**A.W. SUPER-DIAMOND**

**ECONOMY ROLLED STEEL FLOOR PLATE**

Where foot safety—with economy—is a *must*, specify A.W. SUPER-DIAMOND. Secrets of SUPER-DIAMOND's anti-slip protection are the raised diamond-shaped steel figures. Alternately spaced at right angles and correct distances, these raised figures provide safe, foot-gripping friction from any angle of approach.

SUPER-DIAMOND is tough, rolled steel floor plate—can be fabricated with ordinary shop equipment—presents no matching or waste problems—cleans and drains rapidly. Use it structurally, as an overlay or complete flooring.

*No other floor plate can match A.W. SUPER-DIAMOND's safety, durability and easy maintenance at so low a cost.*

**A.W. SUPER-DIAMOND**  
**ROLLED STEEL FLOOR PLATE**

*"The diamond in the rough... a gem of a flooring."*

**ALAN WOOD STEEL COMPANY**

Conshohocken, Pa.

Please send A.W. SUPER-DIAMOND Booklet SD-12

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Other products: A.W. ALGRIP Abrasive Rolled Steel Floor Plate—Plates—Sheets  
—Strip—(Alloy and Special Grades)

For plants where oil, water and grease raise special problems of slipping accidents, we suggest a check on the special qualities of A.W. ALGRIP... the world's only abrasive rolled steel flooring.



For More Information Circle No. 220 on Inquiry Card—Page 17

**new  
products**

*(Continued from page 136)*

baler's loading chamber, positioned directly underneath. Upon completion of discharge, the scale doors close and the belt conveyor is activated to resume feeding.

The press will produce 120 bales an hour, representing from 4,000 to 6,000 lbs. of scrap, depending on the type of material.

Circle No. 34 on Inquiry Card—Page 17

**Ceramic Fiber Available  
as Rope**




An aluminum-silicate material, Fiberfrax ceramic fiber, is now available in rope form. Taking heat as high as 2300°F, the ceramic rope, which is lightweight and resilient, provides handling and installation advantages in many high temperature applications. Thirty feet of ½" diam. rope weighs 1 lb, giving 50% more rope length than an equivalent weight of asbestos rope. Its resiliency makes it especially useful as expansion joint and high temperature caulking. According to the manufacturer, The Carborundum Co., Niagara Falls, N. Y., the rope may also be used as insulator wrapping and for high temperature gaskets and seals.

Circle No. 35 on Inquiry Card—Page 17

For More Information Circle No. 221  
on Inquiry Card—Page 17→

**PURCHASING**

*Write your own ticket—*

|   |   |                 |   |
|---|---|-----------------|---|
| <b>MASTER</b>   |   |                 |   |
| ALTERNATING CURRENT MOTOR   |   |                 |   |
| SERIAL  | ✓ | STYLE           | ✓ |
| TYPE  | ✓ | FRAME           | ✓ |
| VOLTS   | ✓ | CYCLES          | ✓ |
| AMPS.   | ✓ | PHASE           | ✓ |
| R.P.M.  | ✓ | SERVICE FACTOR  | ✓ |
| CODE  | ✓ | TEMP. RATING    | ✓ |
|  |   |                 |   |
| MANUFACTURED BY   |   |                 |   |
| THE MASTER ELECTRIC CO., DAYTON, O., U.S.A.                                       |   |                 |   |
| 62916   |   | PATENTS PENDING |   |

What are your power drive requirements? Here at Master, with the widest selection in the nation to choose from, you're sure to fill your needs quickest and best.

Need something special in gear reduction—electric brakes—variable speed operation—fluid drive or special mounting? Or would some of our standard models ( $\frac{1}{8}$  to 400 H.P.) fill the bill? You'll find the answer here! And remember, all Master components are engineered to form combinations of units in one streamlined, compact package of efficiency. Name your need and the name that fills it is Master—for greater salability of motor driven products; for increased productivity of plant equipment.

**Motor Ratings.**  $\frac{1}{8}$  to 400 H.P. All phases, voltages and frequencies.

**Motor Types.** Squirrel cage, slip ring, synchronous, repulsion-start induction, capacitor, direct current.

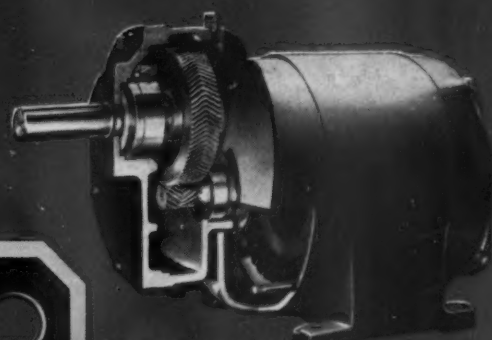
**Construction.** Open, enclosed, splash-proof, fan-cooled, explosion-proof, special purpose.

**Speeds.** Single speed, multi-speed, and variable speed.

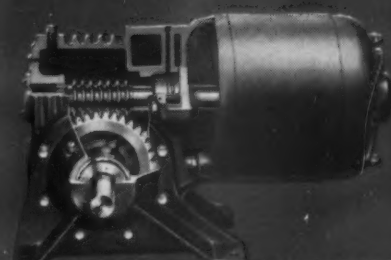
**Installation.** Horizontal or vertical, with or without flanges and other features.

**Power Drive Features.** Electric brakes (2 types)—5 types of gear reduction up to 432 to 1 ratio. Mechanically and electronically-controlled variable speed units—fluid drives—every type of mounting.

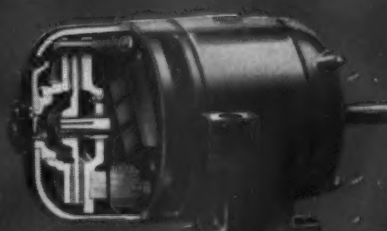
**THE MASTER ELECTRIC COMPANY**  
DAYTON 1, OHIO



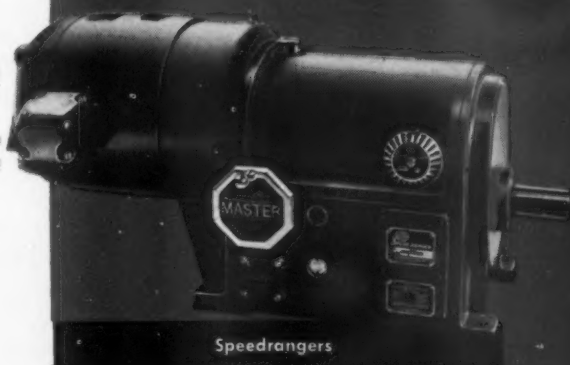
Parallel Shaft Gearmotors



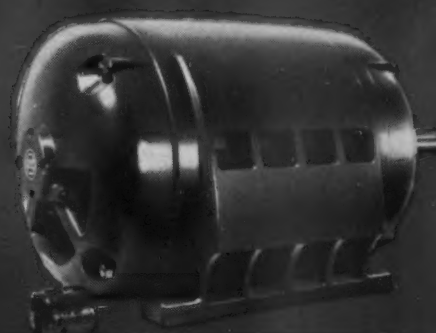
Right-Angle Shaft Gearmotors



Uni-brake Motors



Speedrangers



Standard Motors— $\frac{1}{8}$  to 400 H.P.

**CESCO** RIGHT...before your Eyes!



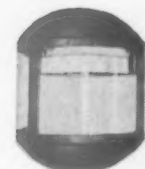
Snap-fast Face Shield  
with deflector crown



Open top  
Snap-fast Face Shield



Helmet-type Face Shield



Full-visibility  
Helmet-type Face Shield



Spark Shield

**NEW!**

**CESCO**

**All-Purpose  
Face Shield**

**for general shop work**

The CESCO 770 Face Shield comes in three window lengths of 4", 6" and 8" (top to bottom). The windows mount inside an aluminum channel in a tight assembly impervious to the entrance of dirt or liquid.

The head band of vinyl plastic is adjusted by a sliding strap. There is no metal or mechanical adjustment to snag the hair. The shield conforms easily to the head at all points. Windows are of cellulose-acetate and may be in either green or clear.

Contact your nearest CESCO distributor today or write for complete information and prices.

**Write for complete Catalog**

**CHICAGO EYE SHIELD COMPANY**

2315 Warren Boulevard, Chicago 12, Illinois

OFFICES IN: Atlanta, Baton Rouge, Birmingham, Boston, Buffalo, Cincinnati, Cleveland, Columbus, Dallas, Denver, Detroit, Houston, Kansas City, Knoxville, Little Rock, Los Angeles, Louisville, Mexico City, D.F., Milwaukee, Montreal, Orange, Peoria, Philadelphia, Pittsburgh, Salt Lake City, San Mateo, Spokane, St. Louis, St. Paul, Toledo, Tulsa

**CESCO**



**FOR SAFETY**

new  
products

### Three-, Four-Flute "Core" Drills

Constructed so that the center portion of drill does not cut, a line of three and four flute type core drills have been specifically designed by Whitman & Barnes, Plymouth, Mich. for enlarging holes. The drills facilitate the use of greater feeds and, therefore, increase production in enlarging operations. Also, the drills afford smoother, more accurate finishes. Furnished in straight and taper shanks, sizes range from 1/4" to 3" in taper shanks and from 1/4" to 2" in straight shanks.

Circle No. 36 on Inquiry Card—Page 17

### Eliminating Pallet Handling



Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore., states that a newly designed device for its 3000 lb and 4000 lb capacity lift trucks rapidly handles cartons and packages without pallets. These "Cart-N-Grab" arms, the widest in their field, accommodate packages from 22-1/8" to 70-3/4". They hold entire packages firmly, without spillage or damage. The arms are said to operate faster than other models and the side-shift feature of the device facilitates positioning.

Circle No. 37 on Inquiry Card—Page 17  
For More Information Circle No. 223  
on Inquiry Card—Page 17→  
**PURCHASING**

For More Information Circle No. 222 on Inquiry Card—Page 17



## HYDRAULIC PUMP OILERS



Keep moving parts of machines and other large equipment running smoothly . . . flexible, straight or angle spouts.

## #33 ALL-PURPOSE PUMP OILERS



Dependable, reasonably-priced . . . for many lubrication needs in factory, machine shop, warehouse . . . also available with flexible spouts.



## SAFETY CANS

approved by Underwriters' Laboratories, Inc. and Factory Mutual . . . safe for handling of flammable liquids . . . trigger or free-swing handle type.

# USE **EAGLE** INDUSTRIAL OILERS and CANS *The Complete Line*

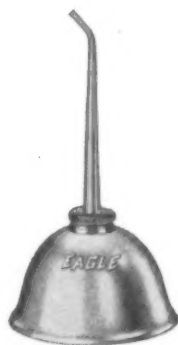
Eagle high-quality oilers and cans are made in all styles and sizes for every factory purpose. Efficient design and sturdy construction assure economical, lasting service.

*Order* EAGLE cans and oilers from your supplier or write direct to Eagle for information.



## WELDED STEEL SUPPLY CANS

Storage and filling cans for railroads, mills, factories, mines, foundries.



## WELDED STEEL BENCH OILERS

For heavy factory use . . . flexible or straight spouts . . . optional seal tip prevents leaking.



## #99 SEAL-TIP TOOL KIT OILERS

Handy for all tool kits . . . for oiling meters, gauges, and many other factory uses.



## #66 ALL-PURPOSE PISTOL GRIP OILERS

Modern-design oilers of many uses . . . spark-proof . . . delivers one drop or a full stream of oil . . . also available with flexible spouts.



## GALVANIZED OIL CANS

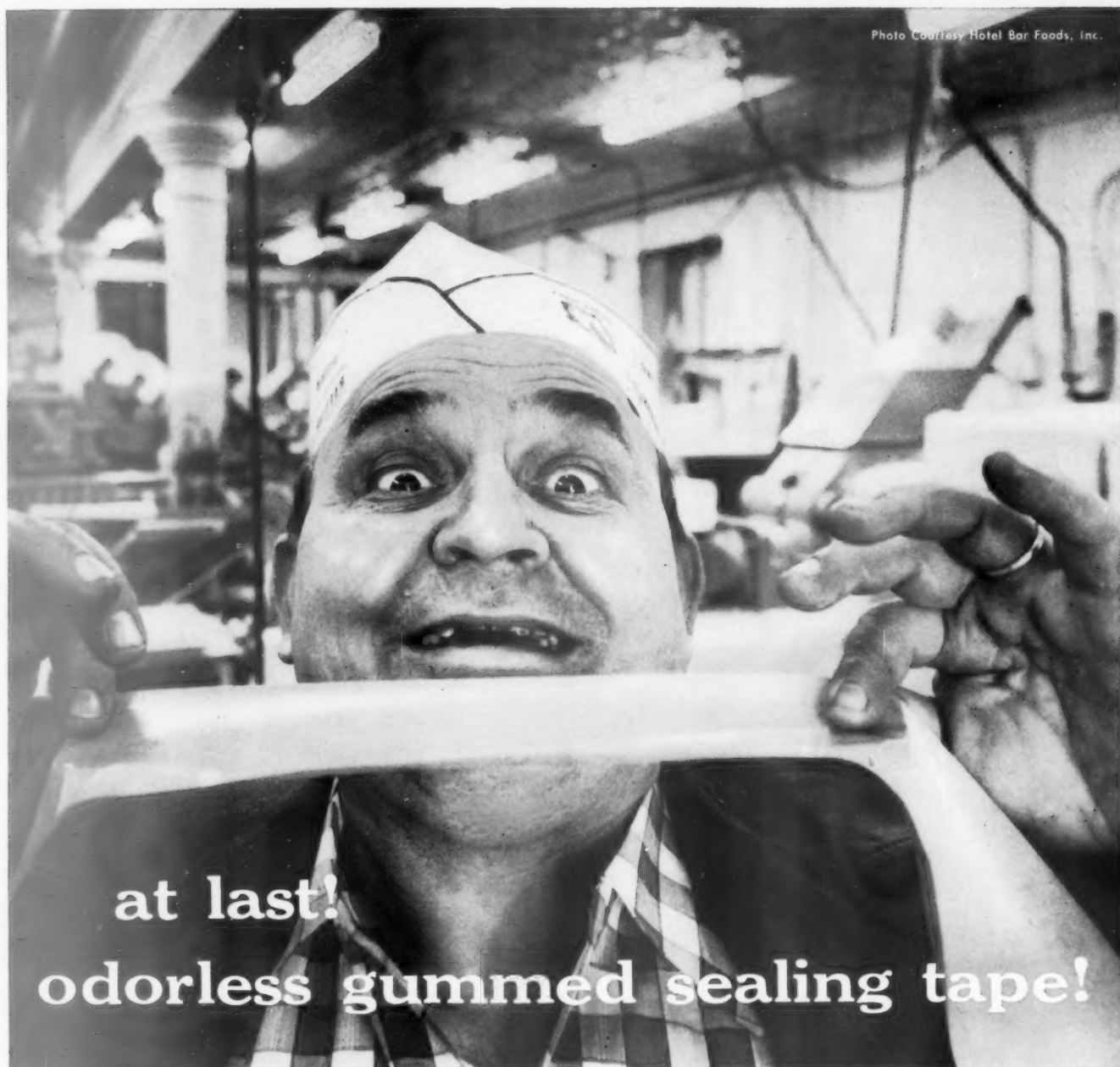
Triple-lock body seams guarantee against leakage, insure strength for hard usage.

*Write* For latest Eagle Catalog showing the Complete Line of Eagle Oilers; Safety, Oil, and Gasoline Cans; and Containers. It's Free.



# EAGLE

**MANUFACTURING CO.** Wellsburg, West Virginia  
Serving Industry Since 1894



## at last! odorless gummed sealing tape!

It's the latest development from Hudson's research laboratories—gummed tape made with *odorless* RENACEL adhesive!

RENACEL is a gummed tape adhesive *without any odor or scent*. Your personnel will welcome RENACEL's unique, odorless quality, because it insures fresher, cleaner air in your shipping room. When tape made with odorless RENACEL seals your cartons, you *know* the contents will arrive safe and protected—free from odor.

RENACEL in Hudson gummed tape, provides other

Now—at no additional cost—you can have more efficient sealing . . . more protection for your cartons . . . impressive dollar savings in tape! Specify one of Hudson's Gummed Sealing Tapes—Blue Ribbon for speed in complete closure—Orange Core for economical standard sealing.

For FREE TEST SAMPLE of Hudson Gummed Tape with RENACEL adhesive, write on your letterhead to Dept. P68. Request Blue Ribbon or Orange Core.

*RENACEL is Another Product of  
Continuing Research by Hudson.*

revolutionary advantages too! *It seals even with ice water.* You can seal instantly, anywhere—in refrigerated or cold, drafty shipping rooms—without heating dispenser water or using costly wetting agents.

RENACEL, teamed with Supple-ization (another Hudson exclusive), gives tape a smooth, silky feel, makes it even more pliant. The tape molds to the carton, handles easier, faster . . . Tape can be stored longer with safety. The rolls open easily, dispense smoothly . . . Bonding strength actually increases with time. Tape won't peel. Cartons remain sealed.



# Hudson

PULP & PAPER CORP.

477 Madison Ave., New York 22, N. Y.

For More Information Circle No. 224 on Inquiry Card—Page 17



GOODYEAR INDUSTRIAL PRODUCTS



**-Specified**

Wedge-Grip Package Conveyor Belting





**A** Soft, long-wearing cover in stepped-down, diamond-shaped design provides long-lasting, superior gripping of smoothest package

**B** Siping—cross-cuts in cover design—improves grip and flexibility

**C** Cross section of belt showing "step-down" design of gripping ridges and fabric reinforcement

## G.T.M. offers unique package conveyor belting

**T**HIS was the problem handed to the G.T.M.—Goodyear Technical Man: Come up with a new package conveyor belt that would be truly general-purpose, that would carry virtually any package up steep inclines, that would top anything on the market.

The answer? Just wait till you see the new Wedge-Grip belting in action. Its unique cross-siped, diamond recessed pattern cover design provides an unparalleled gripping power that won't wear off or be reduced by clogging with dirt or foreign matter.

Even more outstanding is the cover compound developed for this new belt. It combines the softness needed for good gripping with a high abrasion-resistance. And it's unusually resistant to the oxidizing and hardening effects of age.

If you need a belt with exceptional gripping power and resistance to wear, ask the G.T.M. about Wedge-Grip. He'll also be happy to show you his other types of belts to meet any package conveying requirement. You can contact him through your Goodyear Distributor or Goodyear, Industrial Products Division, Akron 16, Ohio.

**WEDGE-GRIP CONVEYOR BELTING by**

# GOOD YEAR

**THE GREATEST NAME IN RUBBER**

**IT'S SMART TO DO BUSINESS** with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."



## MANY DUTIES • ALL WELL DONE

**A Versatile Performer  
Wherever Liquids are Used**



**AURORA®  
Side Suction Centrifugal Pump**

Discharge may be at any of eight positions. Only the pump end need be of special metals to handle corrosives. Combines numerous quality features for extra years of service. Capacities to 1800 G.P.M.; Heads to 190 ft. Write for Bulletin 107-M.



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THE NEW YORK AIR BRAKE COMPANY

12 LOUCKS STREET • AURORA • ILLINOIS

INTERNATIONAL SALES OFFICE, 90 WEST ST., NEW YORK 6, N. Y.  
For More Information Circle No. 226 on Inquiry Card—Page 17

## 6 WAYS to save Building and Maintenance Dollars



### Continental® Chain Link Fence can serve you profitably...

Low Cost Storage Space  
Permanent Dignified Protection  
Reduces Number of Watchmen  
Minimum Maintenance  
Prevents Accidents  
Controls Entrances & Exits



Contains copper, nickel and chromium for higher tensile strength and increased rust resistance.

Chain Link fence can do the work of expensive brick and mortar and save on building costs... by enclosing storage areas, protecting supplies, reducing insurance rates. In Continental Chain Link Fence you get *stronger, longer lasting* fence, with more features, and lowest maintenance. **PLANNED PROTECTION** tells the whole story. Write for a copy today.

The only fence made of **KONIK® STEEL**

## CONTINENTAL

STEEL CORPORATION • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and Special Wire. Also coated Steel Sheets, Nails, and other products.

For More Information Circle No. 227 on Inquiry Card—Page 17

new  
products

### Measures Thickness of Metal Sheets, Plates



Designed especially for gaging the thickness of metal sheets and plates, and for other applications requiring a device with a deep throat, a micrometer measures up to 3 1/4" from the edge of the work. The frame is heavy duty ribbed with a black, non-slip finish. The head has a chrome clad, non-glare finish with black filled graduations and figures. It is available with a range to 1" by .001" with either a plain or a ratchet cap. Manufacturer is The Lufkin Rule Co., Saginaw, Mich.

Circle No. 38 on Inquiry Card—Page 17

### Flame-Resistant Cushioning Material

Armour & Co., Alliance, Ohio, is placing on the market a flexible polyurethane foam cushioning material, called Armofoam. It has no odor, is flame-resistant and is unaffected by solvents, abrasion, vermin or sliding. Temperatures up to 160°F do not affect its characteristics. There is no change in thickness after 250,000 compressions. Its many uses include cushioning of all types, such as shock mountings, industrial seating, flexible covers, electronically sealed cushioning, gaskets, rollers, filters, etc.

Circle No. 39 on Inquiry Card—Page 17

# GENERAL ELECTRIC BUILDS THEM

## trim

Modern, goodlooking styling. Hammered soft gray finish lends itself to any interior of stores, institutions, offices or factories.

## tough

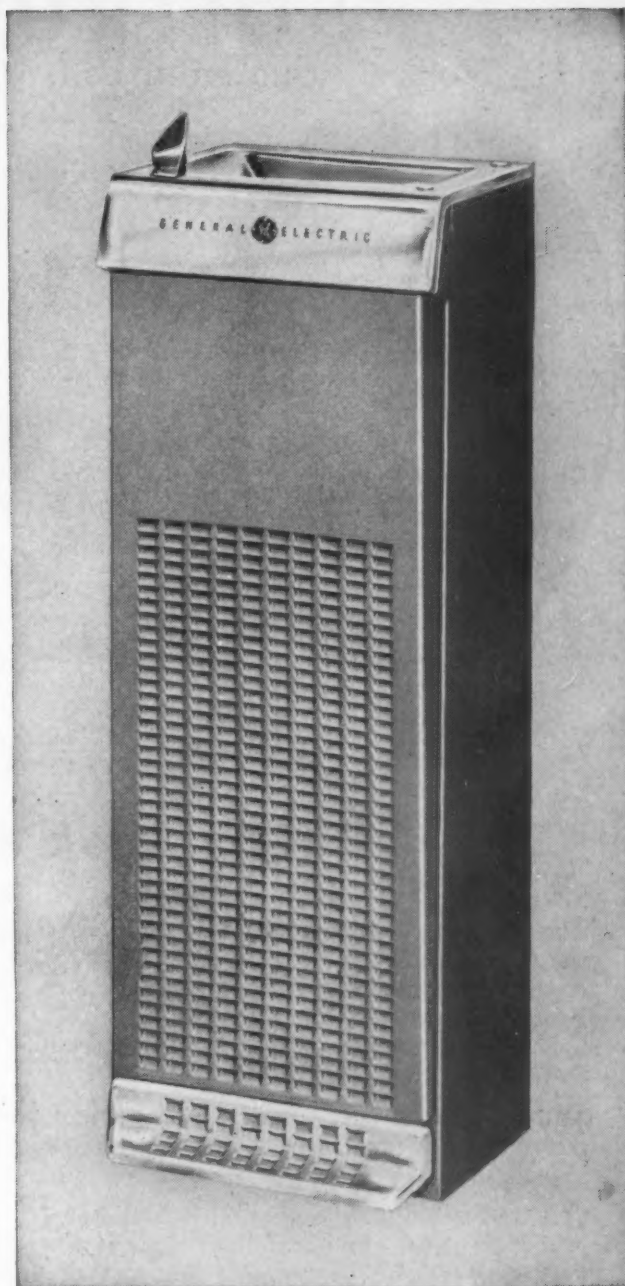
Equipped with time-tested compressors—the same used in millions of General Electric home refrigerators. Heavy gauge steel cabinet.

## tidy

Anti-splash basin avoids splattering of bubbler stream. General Electric's full-width, curved foot pedal provides easy water control without scuffing shoes or stubbing toes.

## and tiny

Take up to 30% less floor space. Fit easily in shallow corners. Over-all depth is up to 5" less than other foot-operated coolers. For easier maintenance and adjustment the front panel snaps on and off.



# WATER COOLERS

*for offices, stores, institutions and factories*

These up-to-date engineering features of General Electric Water Coolers assure dependability and economy for the owner, ease of operation for the user and compact design for the architect. This quality is backed by the standard General Electric product warranty plus 5-year replacement agreement. And it is easy to specify General Electric Coolers—they come in capacities from 2.85 to 21.5 gallons per hour. So, whenever you include water coolers in

your floor plans, be sure to call your local General Electric Water Cooler dealer or write to General Electric Company, Commercial and Industrial Air Conditioning Department, 5 Lawrence St., Bloomfield, New Jersey.

*Progress Is Our Most Important Product*

GENERAL  ELECTRIC

the **NEW**



**SOLFRUNT**<sup>®</sup>

(SOLID FRONT CONSTRUCTION)



the gauge with  
**BUILT-IN SAFETY!**

There's safety with the new USG Solfrunt Gauge . . . behind the face is a solid metal wall! In the event of a Bourdon tube rupture, pressure is released through the large rubber blowout back. The case is of aluminum.

Like USG's Supergauge . . . with proper application . . . the Solfrunt is built to last a lifetime.

**ARC-LOC MOVEMENT**—Rugged beyond compare . . . broad generated gear faces, deep stainless steel bushings. Calibration adjustments from rear by merely removing blowout back.

**SEGMENT**—Stainless steel, with nylon-faced gear section. Nylon-to-metal bond stabilizes the nylon against expansion and contraction . . . maintains accurate pitch diameter . . . assures proper mesh with stainless steel pinion under severe temperature and moisture conditions.

**LEGEND ON DIAL**—gives complete description of socket, Bourdon tube, and movement material for ready identification.

**MICROMETER ADJUSTABLE SELF-LOCKING POINTER**—permits accurate repositioning of pointer.

Solfrunt Gauges available in 4½", 6" and 8½" sizes. For complete information on case styles, materials of construction and connections, write for Publication 1819.

**USG STATES GAUGE**  
Division of American Machine and Metals, Inc.  
Sellersville, Pa.

Home of the **SUPERGAUGE**

For More Information Circle No. 229 on Inquiry Card—Page 17

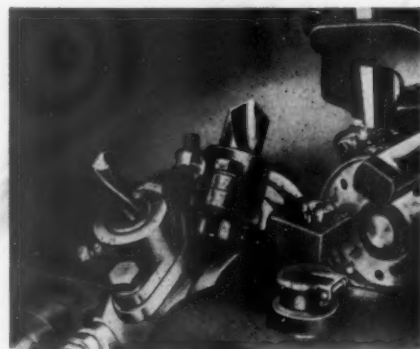
new  
products

**Breakers for Branch,  
Feeder Applications**

Molded case type breakers, with 100,000 amp interrupting rating, are in production by the I.T.E. Circuit Breaker Co., 19th & Hamilton St., Philadelphia 30, Pa. The breaker is made in 100, 225, 400 and 600 amp frame size. It welds a current limiting device to a standard, molded-case circuit-breaker—both in a common molded housing—to provide for the first time a compact electrical protector with exceptionally high interrupting capacity. The breakers are designed for normal branch and circuit feeder applications.

Circle No. 40 on Inquiry Card—Page 17

**Drills Penetrate  
With Ease**



A line of high speed, straight shank, short length drills has been specially designed by Whitman & Barnes, Plymouth, Mich., for use in screw machine drilling operations. Engineered with correctly proportioned web thickness, flute contour and spiral, the drills are said to provide ease of penetration, efficient chip removal and long life between resharpenings. The manufacturer states that initial costs of the drill are less and that there is no expense involved in cutting off, re-pointing and web thinning as when full length drills are used.

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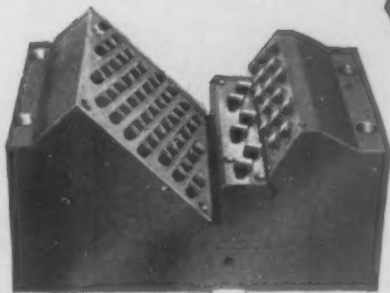
For More Information Circle No. 230  
on Inquiry Card—Page 17→

**PURCHASING**

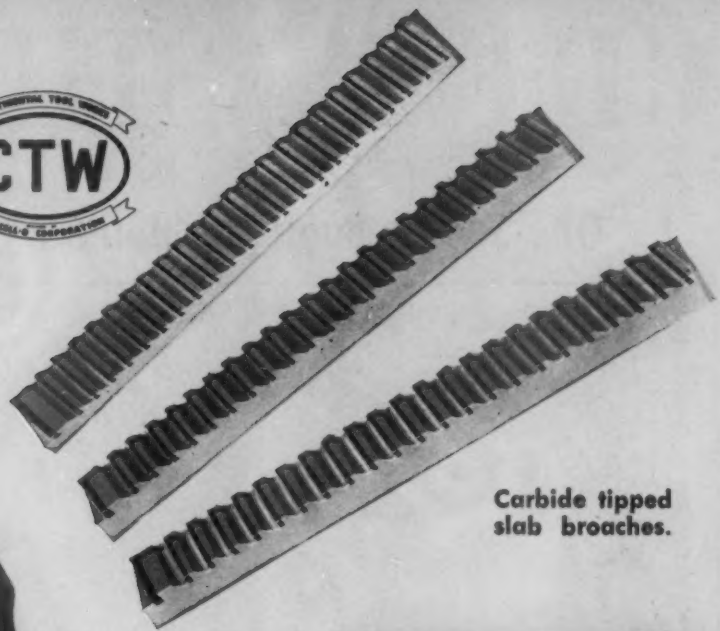




Partial view of a conventional round hole broach. Roughing, semi-finishing and finishing teeth are shown.



Surface broach with adjustable and replaceable carbide tipped tool bits.



Carbide tipped slab broaches.



This solid carbide finishing shell fits on an arbor of a conventional round broach.

## Here's Why Continental Quality Broaches Actually Cost Less Than Ordinary Broaches

Continental's experience in designing and manufacturing has broadened the use of broaching and has brought its advantages to applications that were normally considered impractical.

Continental engineers are tool specialists. Every tooth of a Continental broach is an effective cutting tool because of quality materials, skilled craftsmen and engineering experience.

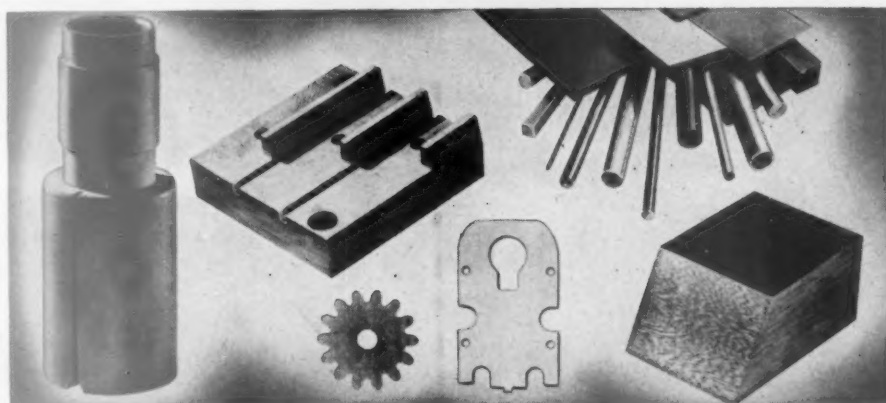
Continental broaches are free cutting, hold required tolerances and finishes with maximum pieces per tool. That's why many manufacturers have learned to agree with Continental—the best broaches cost less.

**Continental**  
**TOOL WORKS**

Division of  
Ex-Cell-O Corporation  
Detroit 32, Michigan

# C-D-F PLASTICS AND FIBRE

## One-Source Buying Simplifies Purchasing, Speeds Production



### C-D-F DILECTO LAMINATED PLASTICS IN MANY GRADES FOR EVERY APPLICATION

Tested over the years by leading manufacturers of electrical equipment, C-D-F Dilecto has been proved to have outstanding electrical and physical properties and a uniformity of quality that can always be depended on.

Dilecto is made in many grades and is available in the form of sheets, tubes, rods, and complete fabricated parts. Bases available: glass mat, woven glass cloth, cotton

mat, cotton fabric, cellulose or asbestos paper, woven asbestos fabric, asbestos mat, woven nylon fabric. Resins include phenolic, melamine, silicone, polyester, epoxy, Teflon\*.

C-D-F gives fast service on raw stock orders, has complete machining and fabricating facilities. Call your C-D-F sales engineer for purchasing and technical help, or write C-D-F for new catalog D-55.



### C-D-F Celoron MOLDED PLASTICS combine high strength, durability

If you buy gears, couplings, insulators, molded plastics of almost any type—get the facts on C-D-F Celoron, a molded-macerated and/or combination laminated material bonded with phenolic resins. Celoron is strong enough for automotive timing gears, versatile enough for the smallest molded insulating part or the largest electromechanical supports. Get Celoron samples by writing to C-D-F. Also ask for Bulletin DC-54.

### DIAMOND VULCANIZED FIBRE

in any form, size

Arc-resistant, arc-quenching, non-corroding, and mechanically strong, Diamond Fibre's high uniform quality is assured by America's most experienced fibre makers. Available from C-D-F in sheets, rolls, strips, tubes, rods, formed and machined specialties. Write for the new Diamond Fibre Catalog DVF-55.

### Complete Line of Plastics, Fibre, Mica Products

The advantages of "one-source" buying were recently summarized for purchasing agents by Continental-Diamond Fibre, one of the country's largest manufacturers and fabricators of electrical insulation and plastics products. No other supplier in its field, explains C-D-F, offers as wide and varied a range of products. One call to a nearby technically-qualified C-D-F sales engineer puts the purchasing agent in touch with a well-integrated, large company with modern producing and fabricating plants. Low competitive prices and fast service are shown to be direct results of C-D-F's post-war expansion and modernization.

### Saving P.A.'s Interviewing Time

A recent poll among purchasing agents indicates that buyers spend 20 to 50% of their time talking to salesmen. Shorter interviews with the man from C-D-F each covering the ground of four or five separate sales calls, give the purchaser more time for improving his own job. And the electrical insulation and plastics buyer knows that the C-D-F sales engineer is thoroughly familiar with his problems, can give expert advice in the design stage and offer dependable quality-control service.

### Many New C-D-F Materials

Among the new and specialized dielectric products made by C-D-F are flexible insulating tapes of Teflon\*, mica combinations, silicone rubber, and silicone-varnished fiber glass. Other new products are metal-clad laminates for printed circuits, post-forming grades of Dilecto laminated plastics (see elsewhere on this page for details); intricate molded parts; fire-resistant plastics; silicone, epoxy, and polyester glass-sheets laminates.

### One-Source Buying Cuts Costs

Using C-D-F as a single large, reliable source of supply for all vulcanized fibre and laminated and molded plastics products speeds the acquisition of technical information, effects closer control of inventory, makes possible group buying of diverse materials which, bought separately, might prove far more costly. One C-D-F salesman, replacing often as many as twenty salesmen, gives the purchasing agent simplified buying, improved products—at lower cost.

|  |  |  |   |   |   |  |   |
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|--|--|--|---|---|---|--|---|



# PURCHASING NEWS



## MICABOND INSULATING COMPONENTS help you build a better motor

C-D-F built-up or bonded mica products are being used to assure quality insulation in America's best-selling motors and generators. Only the finest mica splittings are used in Micabond; thus Micabond parts have uniform high heat-resistance and dielectric strength.

**Forms of Micabond available:** Sheets—Tubing—Flexible Tapes (with cotton, silk, paper, woven glass, and Mylar® backings)—Fabricated Parts in the form of Segments, "V" Rings, Slot Liners, Washers, Punchings of various shapes.

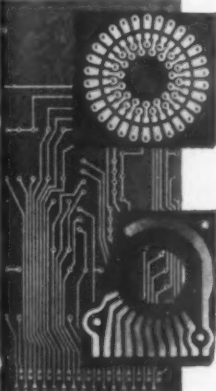
Make C-D-F your dependable source for mica products, and assure yourself strictly followed specifications, low costs, fast deliveries. Call your C-D-F sales engineer or write for samples of Micabond materials.

Micabond Catalog M-55 is also yours for the asking.



## Dependable printed circuits rely on C-D-F metal-clad dielectric materials

Printed circuits etched from C-D-F Metal-Clad Dilecto Laminated Plastics are proving themselves in thousands of TV, radio, and communications equipment applications. Clad with copper foil and having superior heat-resistance, bonding strength and mechanical and electrical properties, Dilecto printed circuit materials are based on epoxy, phenolic, and Teflon® laminated plastics. Low dielectric loss, operating temperatures up to 200°C. in certain grades are characteristics of C-D-F Metal Clad Dilecto. High bond strength of foil to plastic makes punching and machining readily possible either before or after etching. Write for new Catalog D-55.



Photos Courtesy of Photocircuits Corporation, Glen Cove, N. Y.

## C-D-F Flexible Insulating Tapes have high heat-resistance, durability

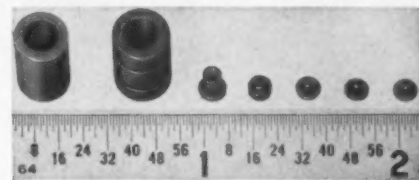
Pressure-sensitive, thermoplastic, and thermosetting insulating tapes for all types of electrical equipment uses are made by C-D-F from silicone varnish, silicone rubber, Teflon®, and Micabond, with various supporting fillers and backing materials. High-heat electrical applications are served by these durable materials and by the wide range of backings in which the tapes are provided.

**Color Identification**—C-D-F tapes of Teflon are made in the standard RETMA colors for easy wire identification in assembly and repair of electrical equipment. Call your C-D-F representative, or write for test samples.



## C-D-F plastics fabrication offers undivided responsibility for quality, delivery

Many manufacturers using machined and fabricated plastics parts have learned the economy of letting C-D-F do the fabrication for them—faster, more efficiently! By the time a manufacturer experiments, tests, and probably rejects much expensive raw material, C-D-F's experience with all plastics work can complete and ship the order without waste and without delay.



C-D-F's small-parts machining and inspection gets results like this. These automotive electrical insulators are mass-produced with uniform high quality at rock-bottom prices for the manufacturer.

At C-D-F's machine shops in Newark, Del., and Valparaiso, Ind., fabricating is done near the presses that produce the raw materials. No time is lost in handling materials; special production runs may be scheduled to coincide with machining operations; C-D-F's "experience bank" provides innumerable short cuts, little tricks that result in lower prices for the purchaser.

### Simplified Production, Storage

Ultimate advantages to you in choosing C-D-F to machine and fabricate your plastics and fibre parts: Assurance of delivery to meet your production schedules; elimination of waste materials, shortages, rejects; uniform high quality of every fabricated part. These become C-D-F's responsibility, not yours.

## NEW C-D-F SPIRAL TUBING



Here's a low-cost spirally-wound paper-plastic tubing available in 18 grades for a wide range of uses. Round, square, rectangular shapes for use as coil forms, insulating tubes, paint rollers, shipping containers, bushings. These are just a few of the many applications. Small sizes, thin walls are no problem. Write for 8-page Technical Folder ST-53, which gives properties, sizes, tolerances. Or call your C-D-F representative.

\*duPont trademarks



# CONTINENTAL DIAMOND FIBRE

CONTINENTAL-DIAMOND FIBRE DIVISION OF THE BUDD COMPANY, INC.

NEWARK 41, DELAWARE

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AUGUST, 1956

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In most two-or-three-lamp fluorescent fixtures the life of the lead lamp is shortened by voltage surges occurring before the lamp cathodes are adequately preheated. The new G-E FS-400 starter has a special glow-lamp switch which assures proper preheat of these lead-circuit lamps.

As a result, this premature burnout of lead lamps is prevented. Maintenance costs are reduced and group relamping programs are made even more practical.

This new FS-400 starter, in addition, offers all the other advantages of G-E Watch Dog starters. It automatically cuts failing lamps out of operation, protecting ballasts and fixture wiring and eliminating lamp blinking. During relamping, it eliminates the usual "waiting" period and speeds up the relamping job. And, one Watch Dog starter will outlast up to ten ordinary starters! Wiring Device Department, General Electric Company, Providence 7, R. I.

\*Registered Trade-mark of General Electric Co.

**GENERAL ELECTRIC**

For More Information Circle No. 232  
on Inquiry Card—Page 17

new  
products

### Plastic Window Filters Sunlight Like Suntan Oil

The problem of storing materials, that can be harmed by ultraviolet rays, such as rubber, can now be solved by a new kind of window, made of plastic reinforced glass fibers and special ingredients that filter sunlight like a suntan oil. The molded panes are said to permit up to 50% of visible light to pass through them but to exclude ultraviolet rays. The panes, which are almost unbreakable, are made in many light-fast colors. They are installed by the usual glazier's methods. The manufacturer is the Firestone Tire & Rubber Co., Des Moines, Iowa.

Circle No. 42 on Inquiry Card—Page 17

### Well-Balanced Rod End Control Bearings



The Fafnir Bearing Co., New Britain, Conn., has developed a series of rod end control bearings of a new balanced design for use in aircraft. Coming in five sizes, each member of the series has been specifically designed so that bearing capacity, shank strength and bolt strength are in balance. The standard sizes of the series meets a wide range of requirements for anti-friction rod ends. There are two ball bearing rod ends with high shanks for manually-operated control systems and three high capacity roller bearing rod ends for power-operated flight control systems.

Circle No. 43 on Inquiry Card—Page 17

LONG LIFE—Dockson Goggles are BUILT FOR BETTER SERVICE. They will last and last.  
YOUR DOCKSON DISTRIBUTOR—a selected specialist, stocks a complete line of Dockson Products to give you fast service and personal attention. We back our distributors 100%.

COMPLETE PROTECTION—against sparks, dust particles, chemical splash, glare, and injurious rays. Dockson Goggles, available in over 20 models with a full range of lenses, are shop engineered for your rigid requirements.  
REAL COMFORT—Lightweight, easy-sitting, top visibility is yours with Dockson Goggles.

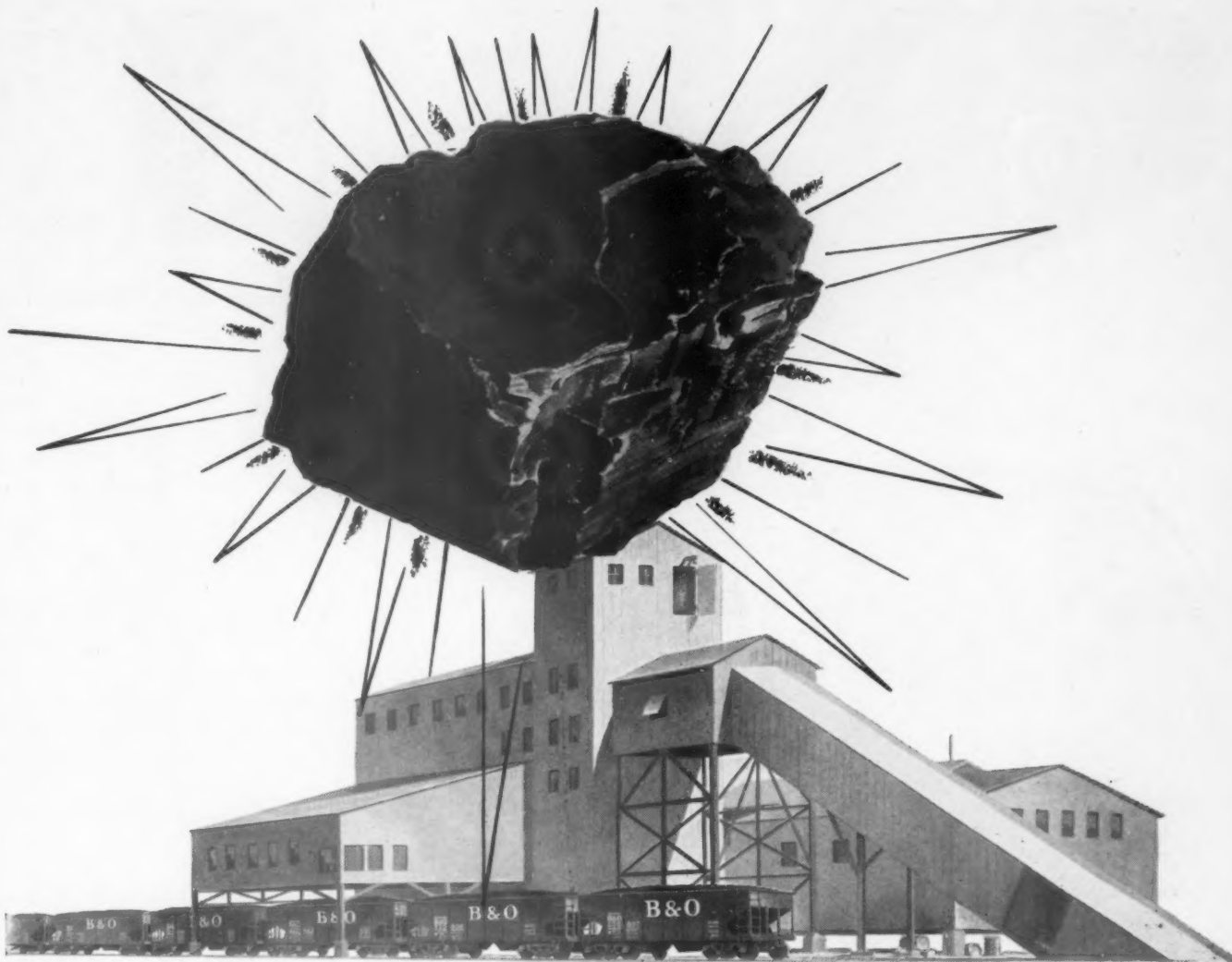
**DOCKSON GOGGLES** Built for Better Protection

WRITE FOR YOUR  
DISTRIBUTOR'S NAME  
AND OUR COMPLETE  
CATALOG OF HEAD AND  
EYE SAFETY EQUIPMENT.



For More Information Circle No. 233  
on Inquiry Card—Page 17

**Dockson**  
CORPORATION  
3839 WABASH • DETROIT 8, MICH.



## *Energy Unlimited!* **BILLIONS OF TONS OF LATENT POWER... READY TO MEET THE FUTURE'S NEEDS**

➔ Bituminous coal offers the nation a priceless commodity—a virtually untapped source of low-cost power. The B&O serves areas with proved *usable* reserves containing billions of tons of this *fuel with a future*, convenient to industry's heaviest concentration.

As population grows and living standards soar, the added energy requirements can easily be met by B&O Bituminous. In addition, its modern mining and utilization will assure greatest efficiency at stable, low cost. *Ask our man!*

### **LET OUR COAL TRAFFIC REPRESENTATIVE HELP YOU!**

He will gladly suggest the perfect constant-low-cost Bituminous coal for your particular needs.

COAL TRAFFIC DEPARTMENT B&O RAILROAD  
Baltimore 1, Md. LExington 9-0400

**BITUMINOUS  
COALS  
FOR EVERY  
PURPOSE**



## **BALTIMORE & OHIO RAILROAD**

For More Information Circle No. 234 on Inquiry Card—Page 17



# START HERE if you Want Top Performance in HOSE

## ACME

Hose Products  
for applications  
involving

High Pressures  
High Strength  
Flexibility  
Durability  
Misalignment  
Expansion  
Contraction  
and  
Resistance to  
Vibration  
Shock  
High  
Temperature  
Abrasion  
Wear  
Corrosion  
Oil & Solvents

Every length of ACME'S varied line of RUBBER HOSE is specially engineered to meet the requirements of the application for which it is recommended. It is made by hose specialists in a plant devoted solely to hose manufacture for 53 years. What are your needs? Chances are we have it readily available in stock. If not, we'll make it for you.

## PUT THE JOB UP TO . . . . .

# ACME

## HOSE SPECIALISTS

ACME RUBBER MANUFACTURING CO.  
608 LEVER STREET TRENTON, N.J.

For More Information Circle No. 235 on Inquiry Card—Page 17

new  
products

## Self-Locking Spline Nut Grips Tighter

An improved self-locking spline nut has been developed by Elastic Stop Nut Corp. of America, Union, N.J., to provide tighter grip and smoother installation in aluminum and magnesium alloys. Designed to be used as self-wrenching fasteners, the spline nuts serve as blind mounting fasteners for spots where it is desirable to have an attached nut for ease of maintenance. The counterbored shank of the nut accommodates "AN" thread length bolts while a chamfered pilot on shank centers the nuts on insertion. The locking insert is of red nylon to offer maximum in re-use.

Circle No. 44 on Inquiry Card—Page 17

## Tap Drivers Accommodate Wide Range



Scully-Jones & Co., 1901 S. Rockwell St., Chicago 8, Ill., has developed improved tap drivers that accommodate a wide range of tap sizes and provide accurate torque adjustment to suit varied operating conditions. These drivers prevent constant tap breakage, because a modified overriding clutch completely disengages the tap from the driver. They also reduce scrap and rework since the pre-set torque remains constant, giving dependable control under all conditions. Drivers can be used with most machines with a reversible spindle.

Circle No. 45 on Inquiry Card—Page 17



Mr. Purchasing Man:

need an "Engineering Head"



When  
You  
Buy

**MOTORS • CONTROL • DRIVES?**

If you do, Allis-Chalmers is ready to work with you, your engineering staff and/or your consultants. We think two heads are better than one; may we supply the second one?

Get Complete Information. Call your nearby A-C office or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Other Helps  
Available  
from  
Allis-Chalmers

**Price Books**

Is your A-C book up to date? Let us check it for you.

**Inventory Control**

There may be locally maintained stocks that can cut your stock.

**Standardization**

A-C engineers can help cut the number of sizes used.

**Certified Service Factory Parts**

Factory-approved methods are available in all industrial centers.

A-4826

**ALLIS-CHALMERS**



For More Information Circle No. 236 on Inquiry Card—Page 17

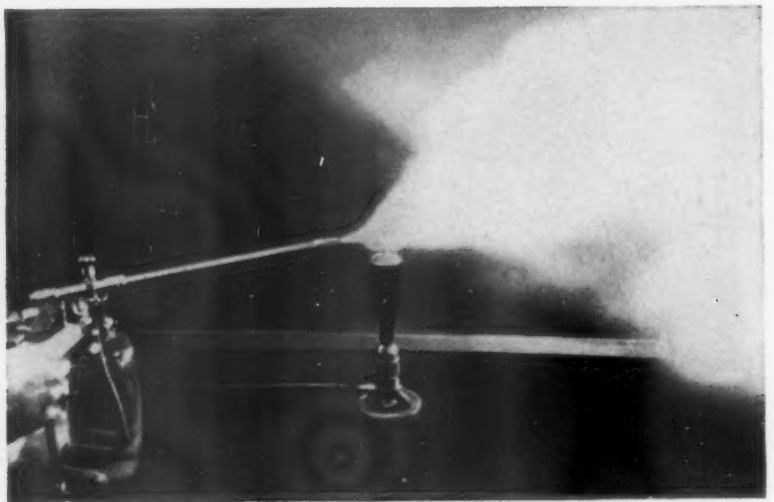
AUGUST, 1956

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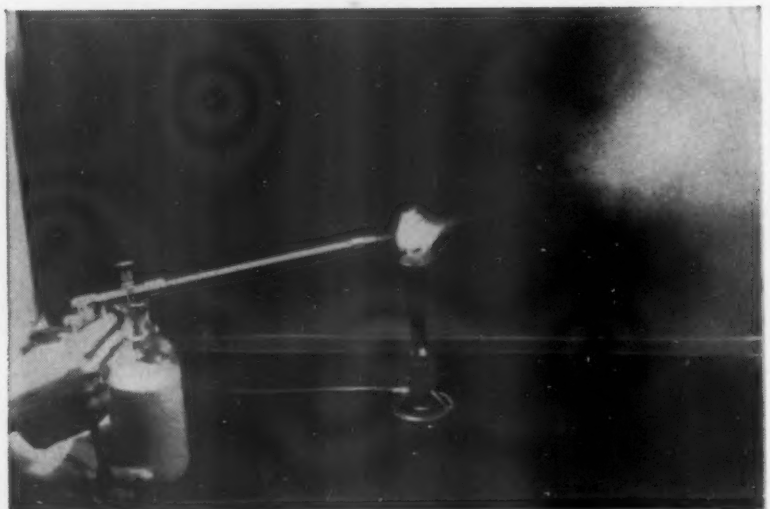
# Announcing...the First HYDRAULIC

**Flame tests prove its fire-snuffing ability**

**This photo shows** the instant combustion taking place when a conventional hydraulic oil of mineral oil type is atomized over a Bunsen burner.



**In this photo,** Shell Irus Fluid 902 replaces the mineral oil. Note that there is no ignition.



## **SHELL IRUS FLUID 902**

# Oil-Base fire-resistant

# FLUID

# SHELL IRUS FLUID 902

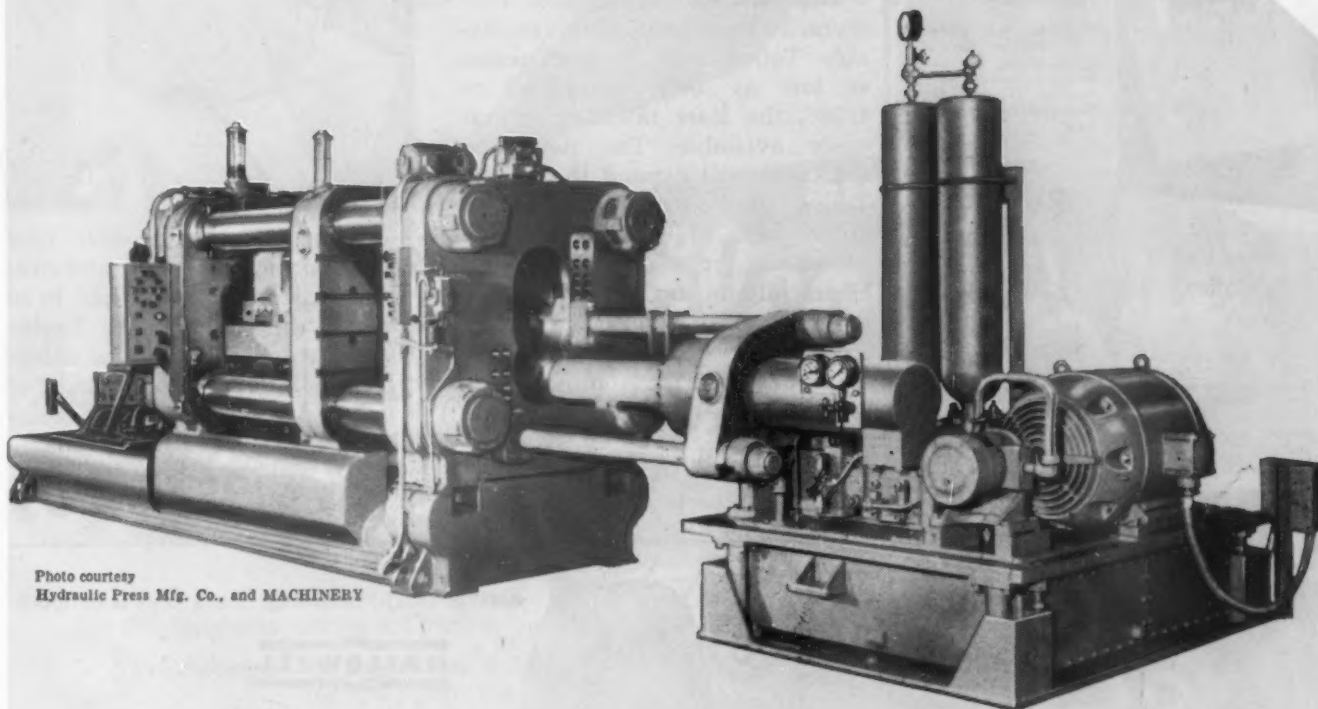


Photo courtesy  
Hydraulic Press Mfg. Co., and MACHINERY

**A**FTER THREE YEARS of intensive research, field application and evaluation, Shell Irus Fluid 902 is now commercially available for use in industrial hydraulic systems. While its cost is far lower than other fire-resistant fluids, its performance is comparable.

**No major modification of equipment is necessary.** Shell Irus Fluid 902 is a special formulation containing no corrosive ingredients . . . no adverse effect on seals or fittings.

It is a direct replacement for hydraulic oils now in service.

**Noncorrosive**, and nonrusting. Steel and copper panels immersed in Irus Fluid 902 for one week at 160°F have shown no significant signs of corrosion. Rusting has not been a problem in long-continued field tests.

This is an efficient fire-snuffing hydraulic fluid that can be widely used. Send coupon for details.

## SHELL OIL COMPANY

50 WEST 50 STREET, NEW YORK 20, NEW YORK

100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA



### SHELL OIL COMPANY

50 West 50th St. or 100 Bush St.  
New York 20, N. Y. San Francisco 6, Cal.

Please send me test data and information on  
Shell Irus Fluid 902.

Name

Company

Address



# Master PADLOCKS for industrial protection!



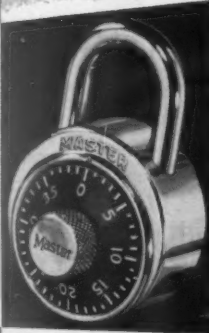
## Famous Master Laminated Padlocks

Multiple steel plates  
... stronger than a  
solid block! Genuine  
brass-cylinder, pin-  
tumbler security. No  
finer padlock protec-  
tion.



## Stainless Steel Combination Padlocks

Double-wall construc-  
tion . . . 3 number  
brass locking mecha-  
nism. Available with  
"Key-Control" — one  
control key opens all  
locks.



## Special Long or Short Shackles

For switch boxes,  
chains, truck or freight  
car doors, and other  
uses where special  
shackle lengths are  
more desirable.



## Speedy Service on Keyed-Alike and Master-Keyed Sets

Master's Service De-  
partment is geared for  
fast delivery . . . in  
emergencies, special  
orders are on the way  
within hours!



## FREE BROCHURE

Condensed, easy to use  
information on the Mas-  
ter padlocks most widely  
used for industrial ap-  
plications. Write today.



## Master Padlocks

EVERY ONE AN OUTSTANDING VALUE

Master Lock Company, Milwaukee 45, Wis.  
World's Largest Padlock Manufacturers

For More Information Circle No. 238  
on Inquiry Card—Page 17

## new products

## Thin Teflon Tape Extends Use as Linings

The Garlock Packing Co., Palmyra, N.Y., is producing cementable Teflon tape in thicknesses as low as .005", compared to 1/16", the least thickness previously available. The new low thickness will expand the use of Teflon as linings for conveyor guide rails, hoppers, corrosive materials, etc. Non-toxic, the chemically-impervious Teflon tape is furnished with a slippery surface on one side and a specially prepared surface on the other so as to bond with commercial adhesives to wood, glass, metal and other materials.

Circle No. 46 on Inquiry Card—Page 17

## Glamour In Drinking Fountains



In line with the modern new design concepts in plant architecture, etc., a new look has been built by the Henry W. Taylor Co., Warren, Ohio, into an industrial drinking fountain. Made of heavy vitreous china, in a completely new design, it is available with or without glass filler.

Circle No. 47 on Inquiry Card—Page 17



## HALLOWELL SOLID STEEL COLLARS

Size-marked for  
quick identification in 43 stock sizes

And these precision-machined solid steel collars stay put because they are held in place on the shaft by the famous UNBRAKO Self-Locking Socket Set Screw. Authorized industrial distributors carry complete stocks in sizes from 1/8" to 3" inclusive. Write for Bulletin 868. STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

STANDARD PRESSED STEEL CO.

HALLOWELL POWER TRANSMISSION DIVISION

# SPS

JENKINTOWN PENNSYLVANIA

For More Information Circle No. 239 on Inquiry Card—Page 17



now..a *New* resilient  
floor  
treatment  
for  
**maximum  
safety underfoot**

Complete protection  
with  
complete safety.

*Now at long last . . . . .*

**"Slip Resistance" PLUS—**

**TOUGHNESS** — to withstand heavy traffic.

**RESILIENCY** — to eliminate brittleness,  
chipping and flaking.

**HARD FILM** — to guard against soft tacky surface  
that foot-marks, catches and holds dirt.

**Easy Sweeping** — no drag on mop. Soil  
and dust sweeps free.

**Stays Cleaner Longer** — Less frequent scrubbing and  
damp mopping — Dirt and dust  
will not become embedded.

**Fewer Recoatings Necessary** — Saves  
material and labor costs.

**Withstands Water Spillage** — Will not turn white.

**Lustre Buffs Back** to like new appearance.

**Traffic Lanes Patch in** without recoating entire area.

**Can Be Removed** like water emulsion waxes.

**Super  
Hilco-Lustre  
FLOOR POLISH**



*Sweeps  
Easy!*



ASK YOUR NEARBY HILLYARD  
MAINTAINER® to demonstrate  
SUPER HILCO-LUSTRE

— another Hillyard First — Tested and  
Proved. The Maintainer is a trained  
floor consultant, experienced in  
solving the most difficult floor problems.  
He is "On Your Staff,  
Not Your Payroll!"



**HILLYARD**  
FOR EVERY TYPE FLOOR

ST. JOSEPH,  
MISSOURI  
Passaic, N. J.  
San Jose, Calif.

In our 49th Year of Service

**HILLYARD, St. Joseph, Mo.**

Without obligation, please have the Hillyard Maintainer  
nearest me PROVE that Super Hilco-Lustre is what my  
floors need.

Name \_\_\_\_\_

Institution \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



## AMERICAN Tubular and Split RIVETS

In all metals, all styles,  
for all industrial applications.

Write for price list.

AMERICAN RIVET COMPANY  
849 N. Kedzie Ave., Chicago 51, Ill.

**BUY AMERICAN...Tubular and Split Rivets...**

For More Information Circle No. 241 on Inquiry Card—Page 17

### RELIABLE

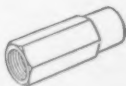
- Off-the-shelf delivery
- Prompt acknowledgement
- Firm Quotations
- Maintained shipping commitments

### LOW COST

for:

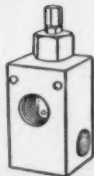
- Material Handling Equipment
- Mining Machinery
- Mobile Equipment
- Machine Tools
- Road Building Machinery
- Test Equipment
- Railroad Maintenance Machinery

### HYDRAULIC PRODUCTS



#### Check Valves

For oil hydraulic systems — 1/4" thru 1 1/4" pipe sizes — pressures 50 to 3,000 P.S.I.



#### Relief Valves



#### Flow Controls

Write today for complete engineering data and prices.

Manufacturers of Hydraulic Valves and Devices

**Fluid  
Controls, inc.**

Relief Valves • Check Valves • Restrictor Valves  
Needle Valves • Pilot Check Valves • Special Valves  
Pressure Compensated Flow Regulators

1284 N. CENTER STREET • MENTOR, OHIO

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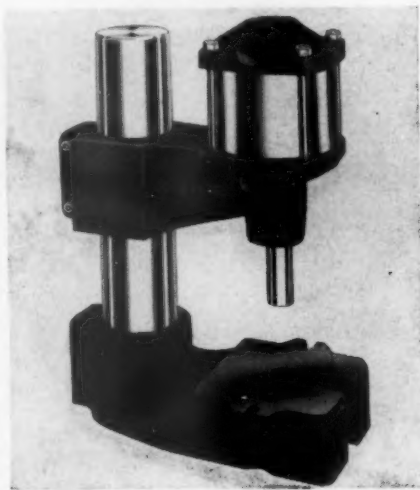
new  
products

### High-Pressure Gun Oils Standard Fittings

Lincoln Engineering Co., 5783 Natural Bridge Ave., St. Louis 20, Mo., says it has developed the first hand-operated high-pressure oil gun for contacting standard lubrication fittings. It permits positive pressure lubrication with oils. It also permits flushing and cleansing of bearings which require periodic applications of fluid lubricant. Metal rings, anodized in various colors, are provided to slip over head of each fitting, identifying each bearing requiring oil, and preventing accidental use of grease gun.

Circle No. 48 on Inquiry Card—Page 17

### Air Press With Multiple Uses



A. Schrader's Son, Division of Scovill Manufacturing Co., Inc., 470 Vanderbilt Avenue, Brooklyn 38, N. Y., announces an air press that can stamp, coin, broach, rivet, stake, press, shape, bend, and assemble — among other things. Maintenance is said to be very low. The new press is outfitted with two-bolt clamping which adjusts easily from 0" to 7" in height, and has a swing arc of 2" on each side of center.

Circle No. 49 on Inquiry Card—Page 17

For More Information Circle No. 243  
on Inquiry Card—Page 17→

PURCHASING



# The **No. 1 ROUTE**

...To Spring Satisfaction  
passes near you...



*A unique springmaking service . . .*

*making available to bustling industrial areas a vast pool of  
integrated skill and research—through separate, complete  
operating Divisions.*

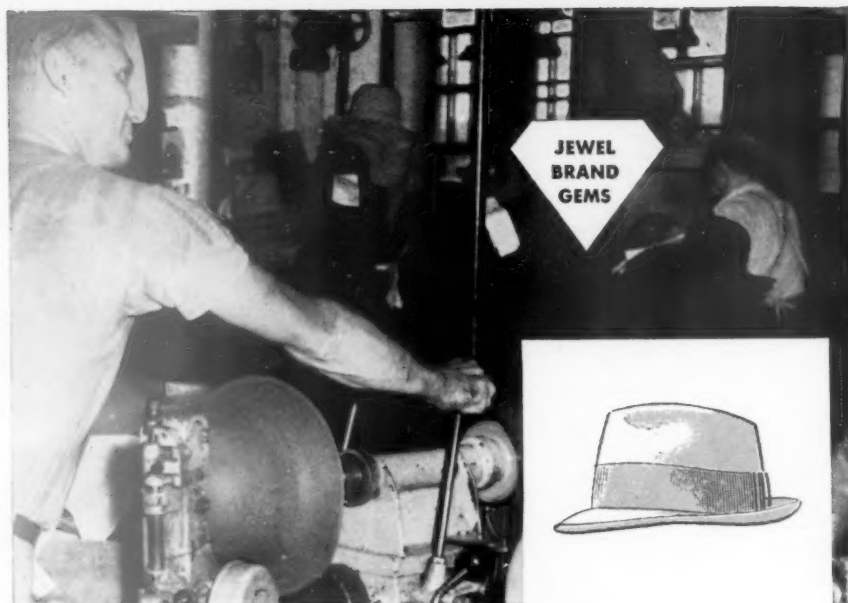
*Factory-trained sales and  
engineering field men.*

*Design literature  
available on all  
types of springs.*

*Divisions of*



**ASSOCIATED SPRING CORPORATION**



## Maybe there's an idea for you in this STETSON finishing operation

Believe it or not, there is some roughness in hat fur. To remove it, STETSON employs abrasives . . . not just ordinary abrasive because STETSON HATS are not ordinary hats . . . STETSON concentrates on JEWEL BRAND POUNCING PAPER. There's a good reason for this. JEWEL BRAND POUNCING PAPER is razor sharp. It cuts clearly without dragging, and is both flexible and durable. For an operation that requires a very light touch, JEWEL BRAND POUNCING PAPER solves

a problem precisely.

You may have some finishing problem where the AP experience involved in this application would be helpful and profitable. AP experience covers a broad range because of the broad range of abrasives AP-Manufactures. You can get the benefits of this experience without obligation. Just call an authorized ABRASIVE PRODUCTS, INC. DISTRIBUTOR or write Abrasive Products, Inc., 523 Pearl Street, South Braintree 85, Mass.

## A Full Line of Coated Abrasives

Jewel Brand Abrasives include **Jewelox**, aluminum oxide on cloth; **Jewelite**, silicon carbide on cloth and paper; **Jewel Garnet**, a natural mineral prepared by an exclusive method; **New Process**, an aluminum oxide abrasive paper, cloth and combination; **Jewel Emery Cloth**; **Jewel Flint Paper**; and **Specialties**. These products conform with the recommendation of the Division of Simplified Practice of the United States Dept. of Commerce.



# Abrasive Products, Inc.

SOUTH BRAINTREE 85 MASSACHUSETTS - MAKERS OF JEWEL COATED ABRASIVES

For More Information Circle No. 244 on Inquiry Card—Page 17

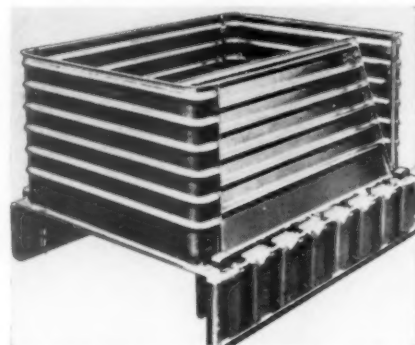
new  
products

## Portable Electric Drill Satisfies Many Needs

Stanley Electric Tools, New Britain, Conn., has designed a competitively-priced electric drill for rugged maintenance, where one drill must satisfy many needs. Capable of top drilling performance on assembly lines, the drill meets all requirements for torque, speed and chuck size. The eight models are ideal for standardization purposes. Three chuck sizes, 1/4", 3/8" and 5/16" are available. These heavy-duty drills are designed for interchangeable handles, either pistol grip or enclosed riveter-type.

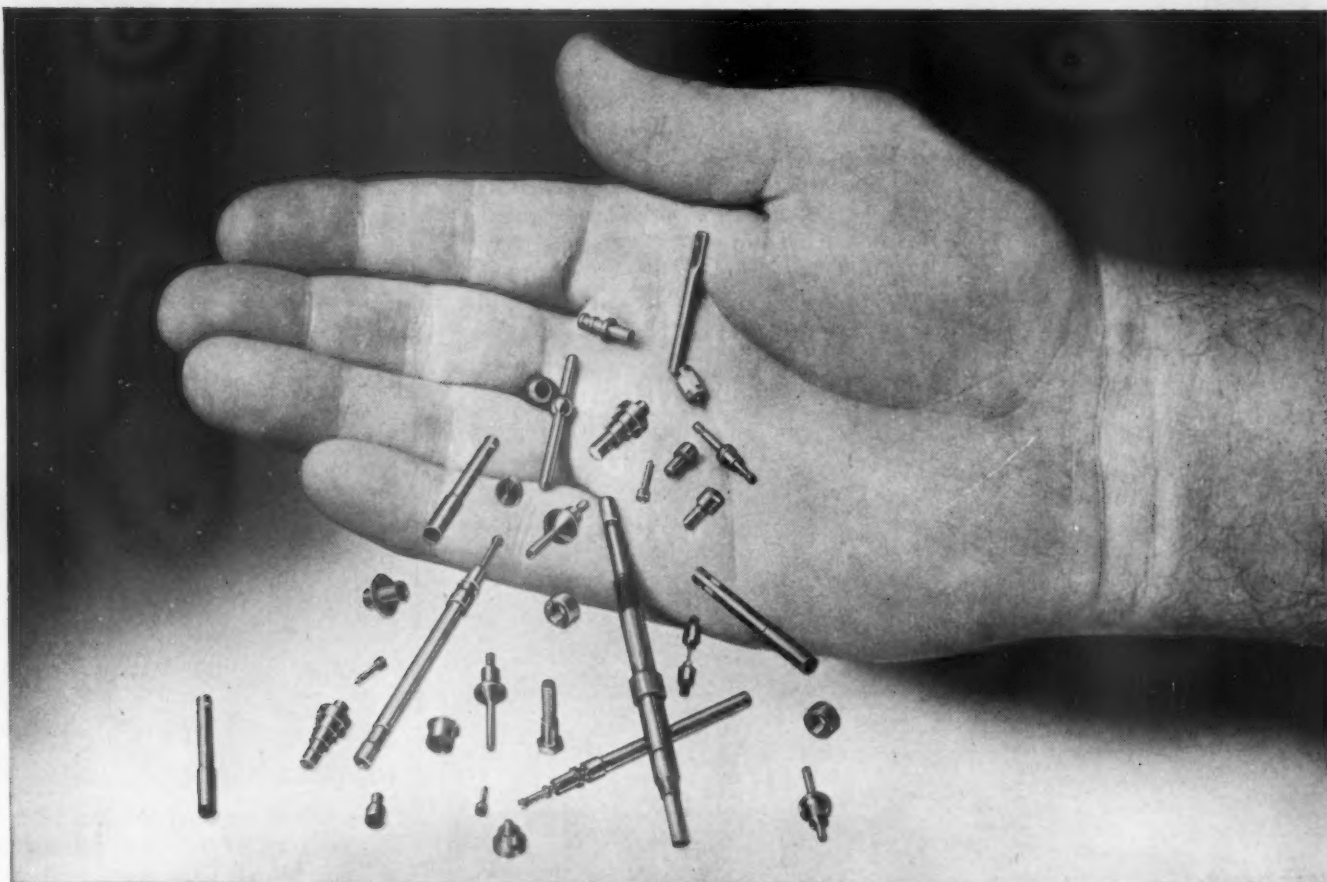
Circle No. 50 on Inquiry Card—Page 17

## Two-Thirds Less Space Needed To Store Boxes



A "fold-away" materials handling box, which can be reduced to 1/5 of its original size is claimed to eliminate up to 66% of the space needed to store, when empty. Made of corrugated steel, the box has collapsible sides which are easily set up or folded. The sides are locked by a pin and slide bolt arrangement, giving the box a rigidity which permits it to be used in the same way as a non-collapsible box. The unit can be tiered when loaded, unloaded or folded. It is a product of Republic Steel Corp., Pressed Steel Div., 6100 Truscon Ave., Cleveland, Ohio.

Circle No. 51 on Inquiry Card—Page 17



## Do small parts like these give you large problems?

Anaconda Rod solved costly production problems  
for G & F Manufacturing Company, Philadelphia

The trend toward miniatures has led to a tremendous increase in the use of small precision parts like these. And this has placed a heavier burden on the screw machine operator and the buyer of rod. Uniformity of alloy and dimension in batch after batch of screw machine rod is vital for economical production.

**ONE COMPANY'S PROBLEM:** The G & F Manufacturing Company of Philadelphia specializes in automatic screw machine production of minute parts, finished to precise dimensions. This company was experiencing costly production delays with the rod they were using, due to jamming and freezing of the rod as it was fed into the machines.

**THE SOLUTION:** Then G & F tried Anaconda Free Cutting Brass-271 Rod in the diameters required for their type of small-part production. They found it highly satisfactory. Down time, due to jamming or freezing of the rods, has been practically eliminated and production schedules are com-

pleted without costly interruption.

Whether for small parts of extreme accuracy—or for ordinary screw machine production—The American Brass Company can furnish free-cutting copper and copper-alloy rods fabricated to meet the requirements of the operation—uniform in length, diameter, temper and composition.

**FREE TECHNICAL SERVICE:** It is the function of the Technical Department of The American Brass Company to assist metal users in the solution of special problems. This service is at your disposal without charge or obligation.

Comprehensive data on composition and machinability of standard Anaconda Alloys, standard specifications, weights and dimensions of standard rods is available in Publication B-3. For this booklet—for special technical assistance—write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

**ANACONDA® RODS FOR SCREW MACHINE PRODUCTS**

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AUGUST, 1956

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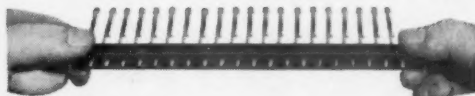


of ACE<sup>®</sup>  
extruded  
HARD  
RUBBER

1



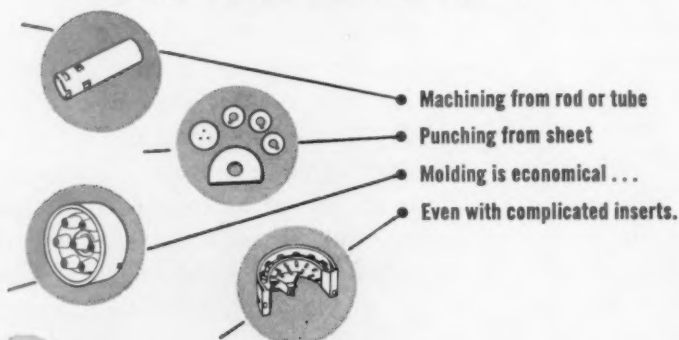
2



3



Looks complicated, but this connector strip was actually produced by a few simple machining operations on standard Ace hard rubber rod. The design engineers chose an Ace compound that not only has excellent strength (up to 10,000 psi), excellent surface resistance and top insulating properties, but also is free-machining. A few high-speed milling and drilling operations, then soften by heating, press in the metal inserts, assemble the contacts with screws, and the job's done. An amazing variety of shapes and compounds of Ace Hard Rubber are possible, even extruded directly over metal rods or tubes. Stir your imagination? Write for more facts today.



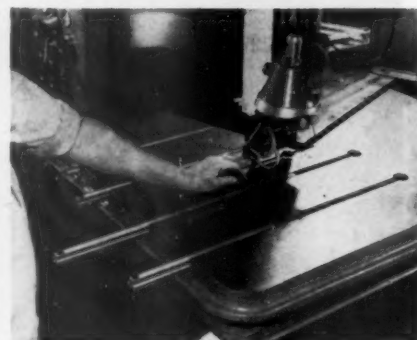
**ACE rubber and plastic products**

**AMERICAN HARD RUBBER COMPANY**  
93 WORTH STREET • NEW YORK 13, N. Y.

For More Information Circle No. 246 on Inquiry Card—Page 17

new  
products

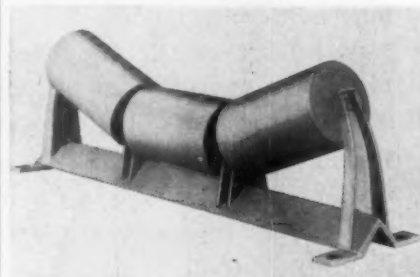
### Accessory Table For Bandsaws



A table accessory for band sawing machines, manufactured by the DoAll Co., Des Plaines, Ill., is claimed to enable setups for straight or angle cuts in metal plate or flat stock to be made in a few minutes. The accessory consists of T-shaped bars designed to fit the T-slots in the hydraulically actuated tables of these band saw machines. The bars can be slid in or out of the table slots independently, and quickly locked in position with an Allen wrench. In this manner, the bars can be adjusted to provide out-board support for stock longer than the table's capacity.

Circle No. 52 on Inquiry Card—Page 17

### Conveyor Idler Gives More Operating Power



Belt conveyor idlers, which offer economic advantages in both original investment and operating power requirements are available for seven belt widths from 14" to

(Please turn to page 166)

**PURCHASING**

# PERFORMANCE VERIFIED / **by acid test**

Even before a Powell Valve is made, it must pass the acid test. For quality control of Powell Valves begins not with manufacture—but with the very materials which go into Powell Valves.

Constant laboratory control is one of the many ways we make certain that Powell Valves will give dependable flow control. Another is the final step of manufacture of these precision-built valves: *every Powell*

*Valve is subjected to an actual line test.*

Because of Powell's painstaking quality control, valve repair is cut to the minimum and plant shut down through valve failure is substantially reduced. Records of performance the world over prove it.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our **COMPLETE quality line** which has **PERFORMANCE VERIFIED**.

**The Wm. Powell Company, Cincinnati 22, Ohio . . . 110th YEAR**



FIG. 241—Iron Body, Bronze Mounted "Model Star" Globe Valve For 125 Pounds W.S.P.

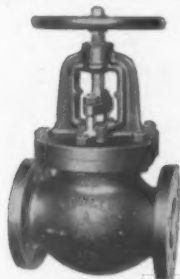
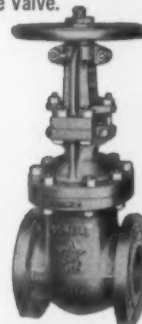


FIG. 560—Bronze Regrinding Horizontal Swing Check Valve For 200 Pounds W.S.P.



FIG. 1503—150-Pound Steel Gate Valve.



# POWELL VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.

AUGUST, 1956

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## WHEN YOU'RE LOOKING FOR

- New Sources of Supply
- Nationally Advertised Lines
- Firms for Special Order Work
- Equipment to Rent
- Nearby Sources
- Prompt Service



**America's buying guide  
for over 60 years**

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## new products

(Continued from page 164)

36". Equipped with ball bearings, the idlers are either of the greasable type with a "one shot" lubrication system serving all three rolls at once, or a factory sealed type which requires no further greasing. Basically, the idler rolls consist of a smooth, uniformly thick outer shell and a heavy wall steel center tube. The tubes are brazed to dish-shape steel heads, forming a strong, moisture-tight, integral unit. The maker is Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Circle No. 53 on Inquiry Card—Page 17

## Battery Lasts Longer With Less Maintenance



New grid alloys and other product improvements have been introduced in a line of batteries for stationary power applications by the Electric Storage Battery Co., Exide Industrial Div., Box 8109, Philadelphia 1, Pa. They are expected to extend service life up to 10% and reduce maintenance requirements. Responsible for the extended life of the batteries is the introduction, for the first time, of silvium positive grids. Silvium, an alloy made of lead, silver and other metals, has superior ability to resist corrosion and withstand overcharging.

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## Leland generators guard the air waves

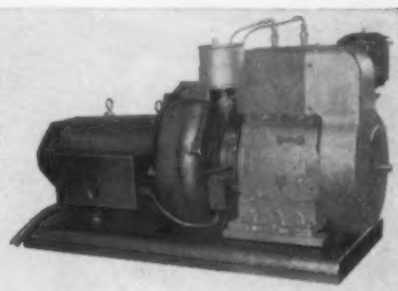
Keeping communication channels open despite failure of normal power is but one of the *many* jobs dependable Leland generators have been doing for years.

Take remotely located micro-wave relay stations that are often at the mercy of the elements. They must *unfailingly* "beam" the signal through... to brighten your home with TV... provide State Police communications... control many vital operations from commercial pipelines to national defense warning systems.

Rugged Leland generators, in special electric/gas-driven power units, regulate the normal power supply day in and year out... *take over completely and automatically* the instant normal power fails... provide uninterrupted service. With Leland generators in the system there's never a moment's delay.

A soundly engineered Leland unit is a safe bet to make *your* product better. Investigate Leland generators... and complete line of motors from  $\frac{1}{8}$  through 5 hp, soon to 20 hp, in all popular types and enclosures. Write today.

Developing 5 KW, a dependable Leland motor-alternator is a major component of this special "Micro-Power" unit designed for all communications services.



### THE LELAND ELECTRIC COMPANY

Dayton 1, Ohio

Division of AMERICAN MACHINE & FOUNDRY COMPANY



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AUGUST, 1956

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# International Molded Plastics Co. cashes Dayton Cog-Belts<sup>†</sup> proved successful on

The effect of continuous stop-and-go operation on the drive of a huge 3000 psi water pump kept maintenance men hopping at International Molded Plastics Co., Cleveland, Ohio. Powering hydraulic presses, which turn out the company's line of plastic dishware, the pump *must* maintain a constant water pressure to keep production moving.

Several methods of transmitting power were tried, but none did the job without expensive maintenance.

Mau-Sherwood, Co., one of Dayton's Cleveland area Distributors, asked the Dayton V-Belt Engineer to see what

he could do to solve the problem for their customer. Dayton's Walt Berlo discussed the matter with International's Chief Engineer, W. D. Martin. Working together, the two designed a V-Belt Drive using 10 "C" section Cog-Belts. To illustrate the thoroughness of the job: Dayton checked with the motor manufacturer to make sure the bearings would take the weight of the drive. Although the pump manufacturer claimed a V-Belt Drive could not possibly do the job, the drive was installed—with every assurance from Dayton that it would perform successfully.

†T.M.



# in on Dayton P. M.\* "impossible" drive

Previous drives stood up *less than a year* under the extremely rough operating conditions and constantly required maintenance. Dayton Cog-Belts, backed by Dayton's P.M. Program, have already *lasted over 15 months* with only one minor take-up, and show no visible signs of wear.

"Dayton was on solid ground when they assured us of performance," said Plant Manager Edward Campi. "We were so satisfied with the Cog-Belt Drive in the first few months that we ordered it duplicated for a similar installation in our Puerto Rican plant, sight unseen."

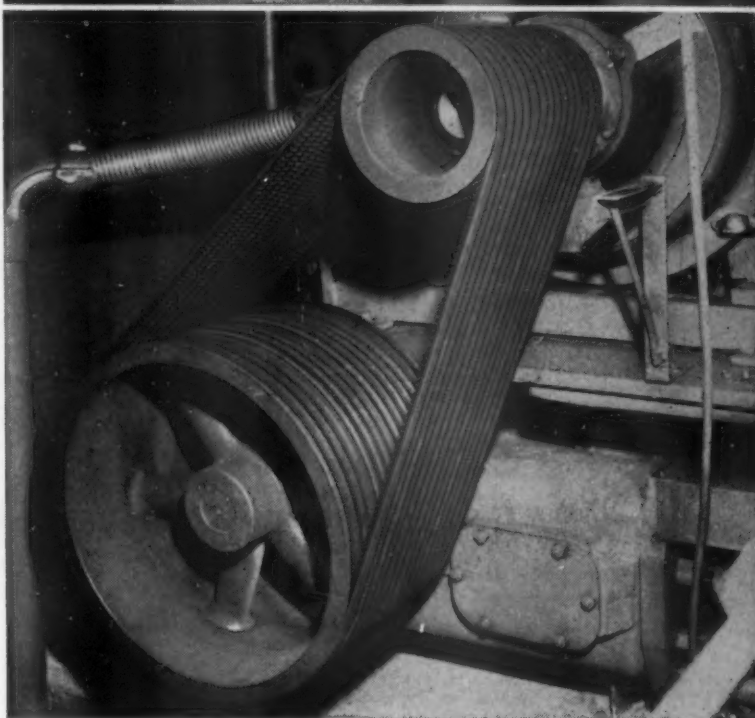
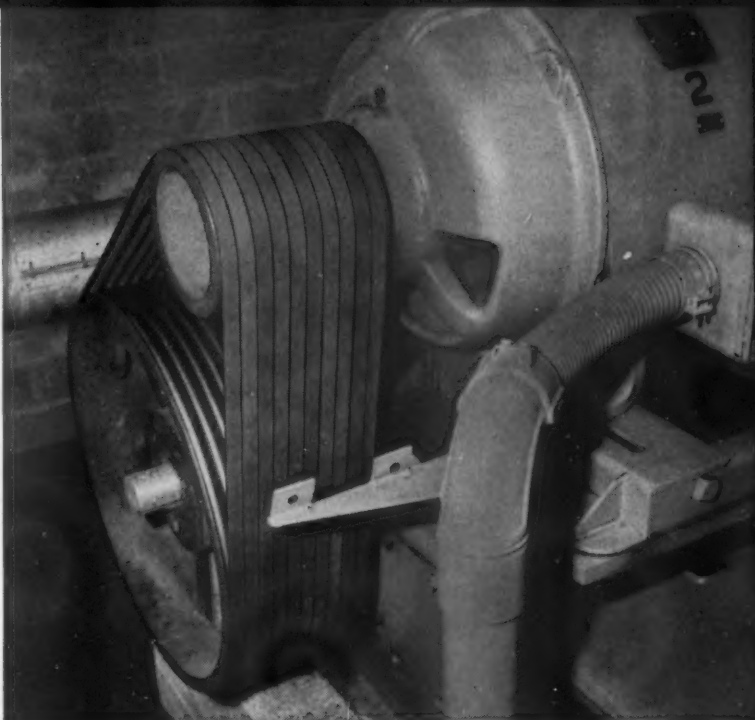
For help in solving individual drive problems and saving money across the board on V-Belt Drive operations, call your Dayton Distributor for more information on Dayton's complete line of V-Belts and the Dayton Preventive Maintenance Program.

## \*Preventive Maintenance



Original 10 "C" Section Cog-Belt Drive is checked by Norm Osterlans, Mau-Sherwood, and Walt Berlo, Dayton, during a Plant Survey. Drive, in operation 14 months, shows no signs of wear.

"To me there's a very real value in knowing a drive is not going to require emergency attention," said W. D. Martin, International's Chief Engineer. "With the Dayton P.M. Program we have that assurance. Dayton Cog-Belts give us an additional advantage over former drives in that they are quieter, last longer and will cost less to replace." Talking with Martin are Walt Berlo, left, Dayton, and Norm Osterlans, Mau-Sherwood.



So successful was the first test drive (top) at International Molded Plastics Co., that a 14 "C" section Cog-Belt Drive was installed soon afterwards on a high-pressure pump (bottom). It is now felt that all pumps will eventually be Cog-Belt driven. As part of the Dayton P.M. Program, however, it has been recommended present drives be continued in service until replacement becomes necessary, thus getting maximum value from this equipment.

See "Belting" in the Yellow Pages for your local Dayton Distributor, or write The Dayton Rubber Co., Industrial Replacement Div., Dayton 1, Ohio.



**Dayton Rubber**  
51 YEARS OF PROGRESS

World's Largest Manufacturer of V-Belts

© D.R. 1956



COOPER ALLOY

## CORPORATION BRIEFS

• Edited by GEORGE BLACK

### AKH #3 NOW AVAILABLE

How to maintain close dimensional accuracy, fine interior and exterior finish and uniform soundness in the casting of a 1¼ lb. stainless steel instrument housing is told in the latest case history in the Cooper Alloy Advanced Know-How series. Ask for AKH #3 and get the full story on the use of shell mold and shell cores in the production of one of those "impossible" castings.

### BUNA N FITTINGS

Vanton's line of Buna N and natural hard rubber fittings is described in a newly revised four-page condensed catalog. Diagrams, dimensions, and application data are included. Ask for Bulletin BN.

### INQUIRIES AT ALL TIME HIGH

The demand for technical literature of value is on the increase. Our librarian reports more than 20,000 individual pieces of literature requested during the past twelve months, and we're glad to know that we are serving the needs of so many plant operating and purchasing people. For a quick glance at the most recent publications available on request, write for Technical Literature Folder TL56.

### OUR FACE IS STILL RED

We're still apologizing to the many people who have requested our deluxe stainless steel valve and fitting catalog. The demand not only exceeded our supply but our ability to process them as well. Even with daily overtime and Saturday work we still haven't caught up with requests . . . so please forgive us if you're one of those on the waiting line.



**COOPER ALLOY**  
CORPORATION • HILLSIDE, N.J.

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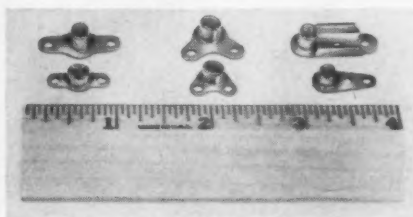
new  
products

### Circuit Breaker Padlocks Only In "Off"

A smaller "E" frame circuit breaker has been developed for combination starters by General Electric Co., Schenectady 5, N.Y., with the handle mechanism mounted directly on the breaker. Meeting JIC specifications, the circuit breaker is so engineered that starter handle can be padlocked only in "off" position. The breaker has an interrupting capacity of 7500 amps and will be supplied on the company's CR 7008 combination starters, CR 7010 combination reversing starters and CR 7108 combination multi-speed starters in sizes 0-3.

Circle No. 53 on Inquiry Card—Page 17

### Miniature Locknuts Stand 550 F Heat



Elastic Stop Nut Corp. of America, Union, N.J., announces self-locking anchor nuts for fastening applications where space considerations are supreme and low weight of paramount importance. They meet the same tensile, vibration and temperature requirements as standard AN366 locknuts of similar configuration. Made of carbon steel, heat-treated and cadmium plated, their weight is 1/3 that of standard locknuts. They are made in 4 thread sizes: 6-32; 8-32; 10-32 and ¼-28 in 3 configurations: 2-lug, corner and 1-lug anchor to stand 550 F temperature.

Circle No. 54 on Inquiry Card—Page 17



**I'M A TOUGH  
BUYER**

### BUT GARRETT'S GOT IT FOR QUALITY

No sir, you can't beat Garrett when it comes to top quality in small parts. Their "statistical quality control system" means every shipment you get is the finest. But quality is only part of what I like about Garrett. They manufacture and stock the world's most complete line of washers and hose clamps. Boy, when you need any kind of a lock washer, flat washer, spring washer or hose clamp you get it fast . . . most everything right out of stock.

When it comes to stampings and assemblies that's where their high-speed automatic equipment stars. Turns out exactly what you want in no time at all.

Sure, I'm a tough buyer. I want the best. I want it fast. I want it priced right. And Garrett is the place for me.

**LOCK WASHERS  
FLAT WASHERS  
HOSE CLAMPS  
STAMPINGS**

Manufactured by  
**GEORGE K. GARRETT CO., Inc.**  
Philadelphia 34, Pa.



For More Information Circle No. 252  
on Inquiry Card—Page 17

PURCHASING

*For the newest in coated abrasives... watch BEHR-MANNING!*



## Grinding and finishing output soars with this latest coated abrasive belt application!



BEHR-MANNING ABRASIVE BELTS team with the new Production Machine Co. #486 Centerless Grinder to produce fast, precision finishes on light round stock. For example, the operator (above) feeds small hardened steel pins at the rate of 20 fpm into the gravity chute. The end result is a continuous flow of finished pieces measuring .375" to .3752" in diameter, with a concentricity of .00015" and a finish of 4-10 rms.

This is another case of proven, modern methods combining with up-to-date Behr-Manning coated abrasive belt applications to provide

industry with superior finishes at record-breaking speeds.

Your finishing operations might require an entirely different abrasive belt application. If so, check with your nearest BEHR-MANNING Demonstration Room for the latest time-saving method. Call your local Behr-Manning Representative, or write direct to Behr-Manning, Troy, N. Y., Dept. P-8.

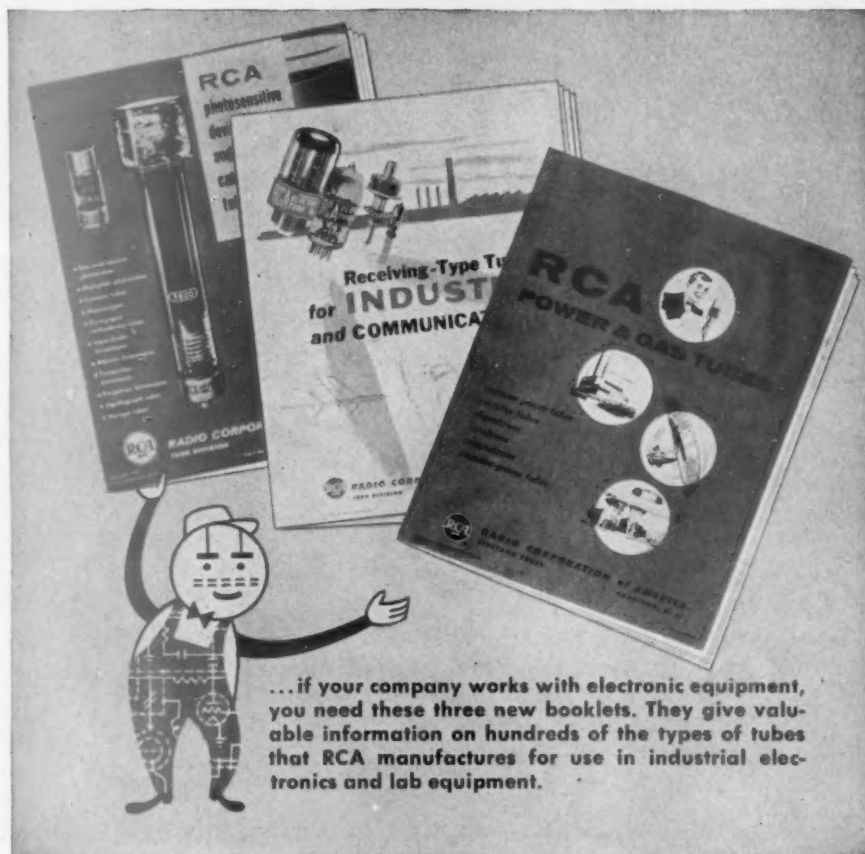
In Canada: Behr-Manning (Canada) Ltd., Brantford.  
For Export: Norton Behr-Manning Overseas Inc., New Rochelle, N. Y., U. S. A.



For More Information Circle No. 253 on Inquiry Card—Page 17

# PURCHASING AGENTS!

## RCA OFFERS 3 NEW AIDS TO ELECTRON-TUBE PROCUREMENT



...if your company works with electronic equipment, you need these three new booklets. They give valuable information on hundreds of the types of tubes that RCA manufactures for use in industrial electronics and lab equipment.

**RCA Power and Gas Tubes (PG-101B)**—24-page booklet contains descriptions, terminal connections, technical information on 178 RCA vacuum power tubes, rectifier tubes, thyatrons, ignitrons, magnetrons, and vacuum-gauge tubes. The most up-to-date booklet of its kind in the industry.

**Receiving-Type Tubes for INDUSTRY and Communications (RIT-104)**—new, 20-page booklet contains up-to-the-minute technical information on 130 RCA receiving-type tubes especially suited to industrial electronics. Includes technical data, socket-connection diagrams, and descriptions on RCA Special Reds, Premium, computer, pencil, glow-discharge, small thyatrons, low-microphonic, and other tube types.

**RCA Photosensitive Devices and Cathode-ray Tubes (CRPD-105)**—a new 24-page booklet, just released; contains descriptions and technical details on gas, vacuum, and multiplier phototubes; camera tubes; monoscopes; flying-spot cathode-ray tubes; view-finder, monitor, projection, and transcriber kinescopes; oscillograph and storage tubes—107 different types essential to industrial electronics and laboratory equipment.

Your RCA Tube Distributor—conveniently located—offers you the finest, fastest service on all your electron-tube requirements. Write on your company letterhead to RCA, Commercial Engineering, Section H-36-T, Harrison, N. J., for a copy of PG-101B, CRPD-105, and RIT-104.



SEND FOR THESE BOOKLETS TODAY!

**TUBES FOR INDUSTRY**  
RADIO CORPORATION OF AMERICA

**RCA ELECTRON TUBES...LONG-LASTING, DEPENDABLE...AVAILABLE THROUGH YOUR AUTHORIZED RCA TUBE DISTRIBUTOR**

For More Information Circle No. 254 on Inquiry Card—Page 17

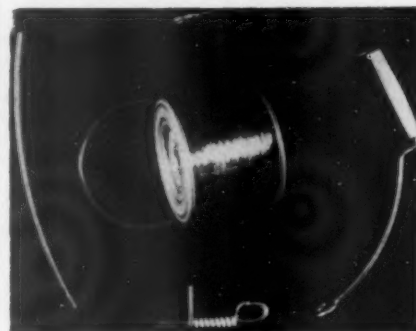
new  
products

### Silver Brazing Alloys In Strip Form Reduce Weight

Silver brazing alloys in expanded and rolled strip form have been developed by Handy & Harman, 82 Fulton St., New York 38, N.Y. In this form, substantial weight reduction is achieved. This is an important factor, for example, in assemblies for aviation service such as honeycomb structures, propeller blades and other large components customarily assembled by brazing. The weight reduction possible is illustrated by the fact that an expanded strip weighs less than 1/3 as much as solid strip of the same cross section thickness.

Circle No. 55 on Inquiry Card—Page 17

### Nickel-Plated Steel Wire



Commercial availability of Fernicklon nickel-plated steel wire with up to 10 per cent nickel coat has been announced by National-Standard Company, Niles, Michigan. Brass-coated wire is also available—in sizes from 0.072" to 0.310". It is recommended for decorative effects in the furniture and accessories field. Typical products include curtain rods, drapery hardware, indoor television antennas, fireplace equipment and grilles.

Commercial sizes of Fernicklon are supplied in the range from 0.010" to 0.310", depending on tensile, in either matte or super-bright finish.

Circle No. 56 on Inquiry Card—Page 17



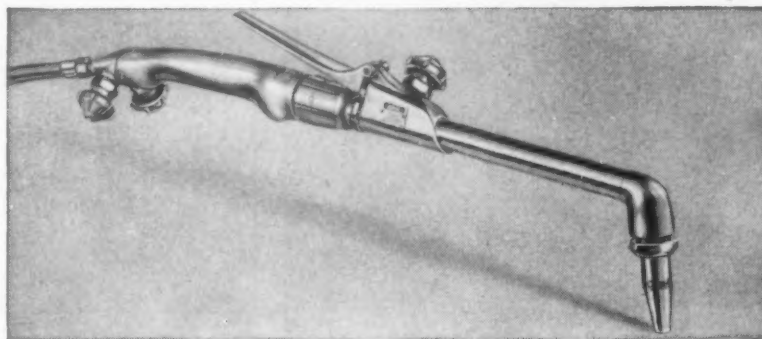
**ONE** wide-range  
**"OXWELD" W-45 BLOWPIPE**  
Trade-Mark  
**handles EVERY welding**  
**and heating job**

**NO OTHER SINGLE BLOWPIPE OFFERS  
 THIS EXTENSIVE RANGE!**

Anyone whose daily work includes welding and heating will readily appreciate the amazing wide range and versatility of the new OXWELD W-45 Blowpipe. Its 18 head sizes (2 to 300 cu. ft. per hr. capacity) provide a perfect flame for every metal thickness. Light sheet to heavy plate, *one blowpipe does it all!*

From chrome-plated tip to offset hose connections, the W-45 shows the results of over a decade of development work by LINDE engineers. Its exclusive "jiffy-lock" heads, "form-fit" handle, and advanced styling are as modern as guided missiles and atomic power. "O" ring gas seals, flame-stabilizing mixers of improved type, and many other innovations put this blowpipe far ahead of the field in economy, ease of operation, and low-cost maintenance.

See for yourself how you can enjoy tomorrow's operating standards today with an OXWELD W-45 Blowpipe. Ask your LINDE representative for a demonstration, or write for free booklet, F-8684.



*CW-45 Cutting Attachment adapts the W-45 Blowpipe for cutting steel up to 8 inches thick.*



**Linde Air Products Company**  
 A Division of Union Carbide and Carbon Corporation

30 East 42nd Street **UCC** New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY  
 Division of Union Carbide Canada Limited, Toronto  
 (formerly Dominion Oxygen Company)

*The terms "Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.*

*Linde*  
 Trade-Mark

AUGUST, 1956

For More Information Circle No. 255 on Inquiry Card—Page 17

**How  
SHENANGO  
CENTRIFUGAL  
CASTINGS  
pay off!**

**NO ROOM FOR TROUBLE...**

because all these parts have been centrifugally cast by Shenango. Centrifugal action forces all gas and impurities from the molten metal. Defects that ordinarily show up in machining or service are eliminated. Next time you need liners, sleeves, rings, rolls, bearings, bushings, or any annular or symmetrical part, rough or precision finished, contact: Shenango-Penn Mold Company, Centrifugal Casting Division, Dover, Ohio.



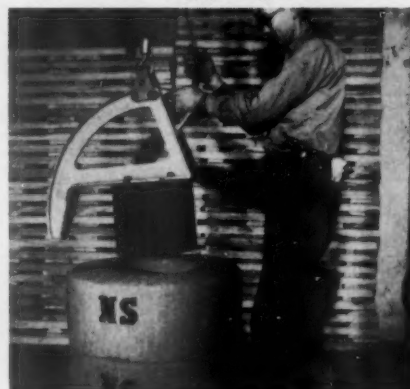
**SHENANGO** CENTRIFUGAL CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES  
MONEL METAL • NI-RESIST • MEEHANITE METAL • ALLOY IRONS

For More Information Circle No. 256 on Inquiry Card—Page 17

**new  
products**

**Reel-less Coil Package  
Cuts Shipping Costs**



Especially designed for handling bead wire used in the manufacture of automotive tires, a coil package replaces the traditional method of shipping wire on heavy reels. Instead, the wire is packaged in tightly-bound coils, spiral wrapped in heavy paper and palletized for easy handling. In addition to reducing tare weight, the reel-less coil eliminates empty reel returns, conserves storage space and facilitates rotation of inventory. National-Standard Co., Niles, Mich., developed the reel-less coil package.

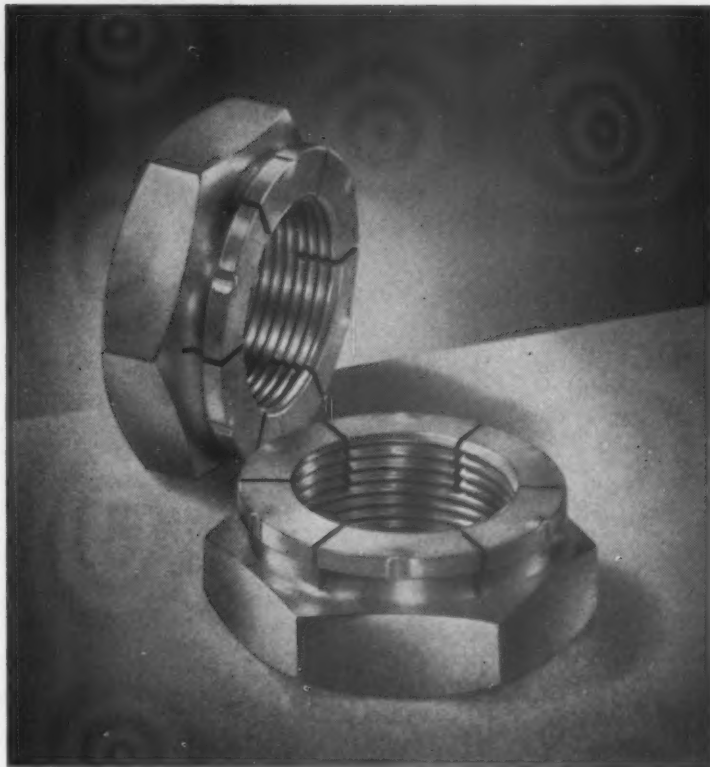
Circle No. 57 on Inquiry Card—Page 17

**Fewer Slips**

A non-skid abrasive aluminum tread plate, that provides sure footing even when covered with oil, grease or water has just been placed on the market by Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa. The slip-proof abrasive plate is designed for such critical locations as steps and aisles, catwalks, truck floors, etc. The product is rolled from ingot by a method which provides a fused aluminum abrasive oxide on one surface of the plate. The layer of abrasive is metallurgically bonded to the aluminum plate, so that in welding the abrasive layer does not part from plate.

Circle No. 58 on Inquiry Card—Page 17

# Flexloc thin nuts save space, weight and production time



SPECIFICATIONS  
FLEXLOC THIN NUTS



NATIONAL COARSE THREAD—U.S.S

| SIZE    | A<br>INCHES | H<br>INCHES | WIDTH<br>ACROSS<br>CORNERS | WEIGHT PER<br>1000 NUTS |
|---------|-------------|-------------|----------------------------|-------------------------|
| 6-32    | .312        | .125        | .361                       | 1.8                     |
| 8-32    | .344        | .172        | .397                       | 2.8                     |
| 10-24   | .375        | .172        | .433                       | 3.3                     |
| 1/4-20  | .438        | .203        | .505                       | 5.4                     |
| 5/16-18 | .563        | .250        | .649                       | 11.6                    |
| 3/8-16  | .625        | .265        | .722                       | 14.9                    |
| 7/16-14 | .750        | .312        | .866                       | 24.9                    |
| 1/2-13  | .813        | .312        | .938                       | 28.4                    |
| 9/16-12 | .875        | .359        | 1.010                      | 36.1                    |
| 5/8-11  | 1.000       | .391        | 1.155                      | 54.1                    |
| 3/4-10  | 1.125       | .406        | 1.299                      | 69.2                    |
| 7/8-9   | 1.312       | .469        | 1.516                      | 107.5                   |
| 1-8     | 1.500       | .563        | 1.732                      | 171.6                   |

NATIONAL FINE THREAD—S.A.E.

|           |       |      |       |       |
|-----------|-------|------|-------|-------|
| 6-40      | .312  | .125 | .361  | 1.8   |
| 8-36      | .344  | .172 | .397  | 2.8   |
| 10-32     | .375  | .172 | .433  | 3.3   |
| 1/4-28    | .438  | .203 | .505  | 5.4   |
| 5/16-24   | .500  | .250 | .577  | 8.7   |
| 3/8-24    | .563  | .266 | .649  | 11.5  |
| 7/16-20   | .625  | .312 | .722  | 14.9  |
| 1/2-20    | .750  | .312 | .866  | 21.7  |
| 9/16-18   | .875  | .359 | 1.010 | 36.2  |
| 5/8-18    | .938  | .391 | 1.082 | 42.4  |
| 3/4-16    | 1.063 | .406 | 1.227 | 54.5  |
| 7/8-14    | 1.250 | .469 | 1.443 | 84.6  |
| 1-14      | 1.438 | .563 | 1.660 | 136.3 |
| 1 1/4-12* | 1.625 | .625 | 1.876 | 193.5 |
| 1 1/2-12* | 1.813 | .750 | 2.093 | 296.0 |
| 1 3/4-12* | 2.000 | .812 | 2.309 | 389.0 |
| 2-12*     | 2.187 | .875 | 2.526 | 498.0 |

\*Steel only (plain or cadmium plated) in stock sizes.

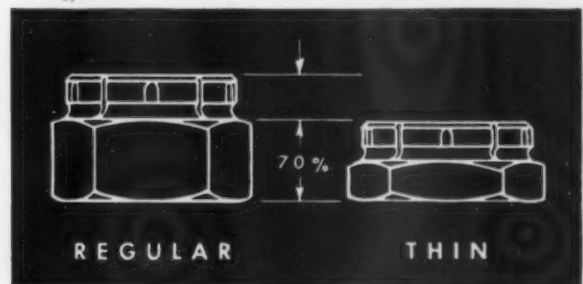
**Self-locking nuts are 30% lower and lighter; speed up assembly with hand or power tools**

Self-locking FLEXLOC thin nuts are 30% lower than regular height locknuts of the same nominal diameter. They fit into spaces where regular height locknuts will not go. You can design lighter, more compact units with them.

Where you must reduce weight in a completed assembly, you can save by using shorter bolts with these lighter nuts. And you save production time. The length of engagement of mating threads is shorter: fewer revolutions of hand wrenches or power nut runners are needed to seat them.

FLEXLOC nuts are of 1-piece, all-metal construction. You can use a FLEXLOC fully seated as a locknut or at any point along a bolt as a stop nut. Once the threads in the resilient locking section are fully engaged, the FLEXLOC grips the mating threads with uniform locking torque wherever wrenching stops. Since there are no nonmetallic inserts to come out or deteriorate, the locking life of a FLEXLOC is virtually unlimited.

Your authorized industrial distributor stocks FLEXLOC nuts in a variety of sizes, materials and finishes. Consult him for details. Or write us for information about your special locknut problem. Flexloc Locknut Division, STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.



**FLEXLOC thin nuts are 30% lower** than regular height locknuts. There is a corresponding saving in weight. In sizes through 5/8 in., thin FLEXLOCs meet tensile strength requirements for regular height locknuts. FLEXLOC nuts can be made in the thin type because every thread, even those in the locking section, carries its full share of the load. There are no nonmetallic inserts to waste head space or weaken the structure of the nut.

Standard FLEXLOC self-locking thin nuts are available in plain or cadmium plated alloy steel, for use in temperatures to 550°F; in plain or silver plated corrosion resisting steel, for temperatures to 750°F; and in brass and aluminum, for temperatures to 250°F.

STANDARD PRESSED STEEL CO.

**FLEXLOC** LOCKNUT DIVISION

**SPS**

JENKINTOWN PENNSYLVANIA



A black and white photograph of a large industrial machine, possibly a motor or pump, with a paperclip holding a note in the foreground. The machine is dark and metallic, with various pipes and structural elements visible. A large, turbulent plume of water or steam is being discharged from the right side of the machine. The background is dark and indistinct.

Motor and Control -  
standard ratings now  
available for immediate delivery  
from warehouses coast-to-coast!

TOMORROW:

## A Standard Motor That Can Live With Water?

The New ***Life-Line A*** Is Another Step Closer

Today's standard motors cannot long endure the water conditions shown here. But Westinghouse is working toward a standard motor that can "live" with water like this tomorrow.

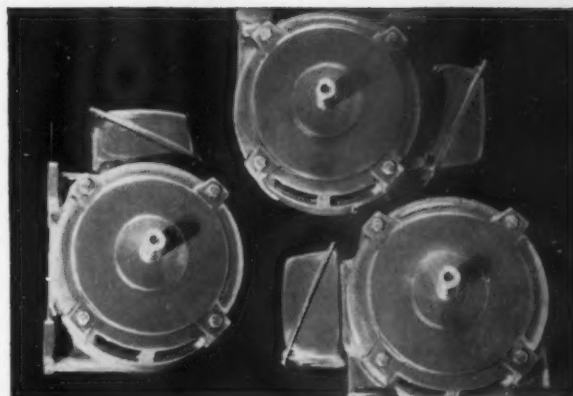
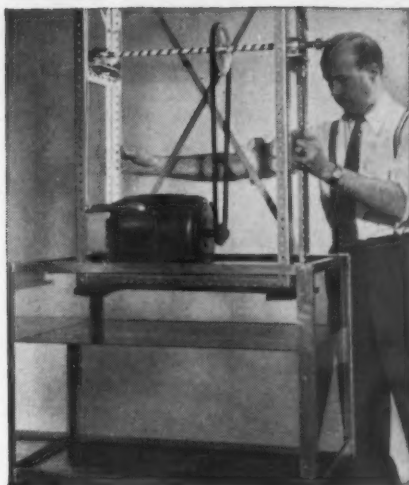
Meanwhile improved frame design, insulation and bearing protection give the Life-Line® "A" more protection than ever before. It can withstand more water and other contamination than any other motor you can buy. It's industry's closest approach to a standard motor that can operate with or within water—in any amount.

Your Westinghouse sales engineer can show you many additional reasons why the Life-Line "A" is industry's most advanced and preferred motor. Call him today.

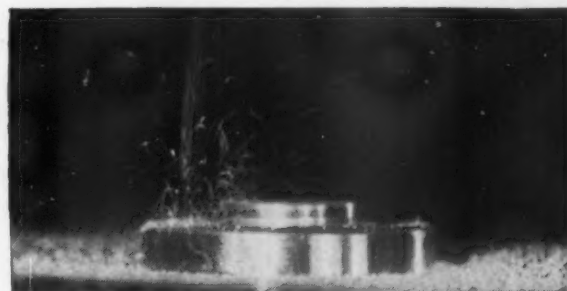
J-21924-A

**WATCH  
WESTINGHOUSE!**

COVER THE PRESIDENTIAL CAMPAIGN ON CBS TV AND RADIO!



New cast-iron frames and brackets utilize the finest grained castings with uniformly thick-walled sections precisely fitted and sealed—another reason why the Life-Line "A" is so preferred.



Two outer seals of new 4-way sealed bearing act as flingers and literally throw off damaging contaminations. Inner seals, attached to outer bearing race, are stationary and form a positive labyrinth.



**this truck**



**this terminal**



**this control room**



**this routing guide**



**are at  
your service**

**... all key phases of SPECTOR'S**

*Customized*

## **FREIGHT TRANSPORTATION SERVICE**

Today's purchasing agent knows the importance of efficient, engineered transportation in controlling the cost and flow of materials used in his plant. His increasing reliance upon motor transportation over the past decade attests to its many comparative advantages—its flexibility, its speed, its versatility, its economy.

Serving more than 5000 industrial and commercial points in 37 states, Spector enables the progressive purchasing agent to broaden his list of sources, reduce over-all inventories and capital investment, coordinate his inbound materials with the distribution of plant output.

Get the facts from your traffic manager or your nearest Spector representative.

A U.S. Custom Bonded Common Carrier



**SPECTOR** FREIGHT SYSTEM, INC.

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St. Louis • Springfield (Mass.) • Worcester

For More Information Circle No. 259 on Inquiry Card—Page 17

**new  
products**

## **Neoprene in Liquid Form For Brushing, Spraying**

For the first time, according to the Wilbur & Williams Co., 130 Lincoln St., Boston 35, Mass., it is now possible to procure Du Pont's Neoprene in liquid form to be applied as a coating by brushing or spraying without the concern hitherto necessary to watch shelf life of the liquid product. Thus the rubber-coat liquid Neoprene will fill a long felt want in industry to provide high resistance to many organic and inorganic chemicals, where other paint products fail. Liquid Neoprene is available in black, red, light gray or aluminum colors.

Circle No. 59 on Inquiry Card—Page 17

## **Tape Dispenser Facilitates Splicing**



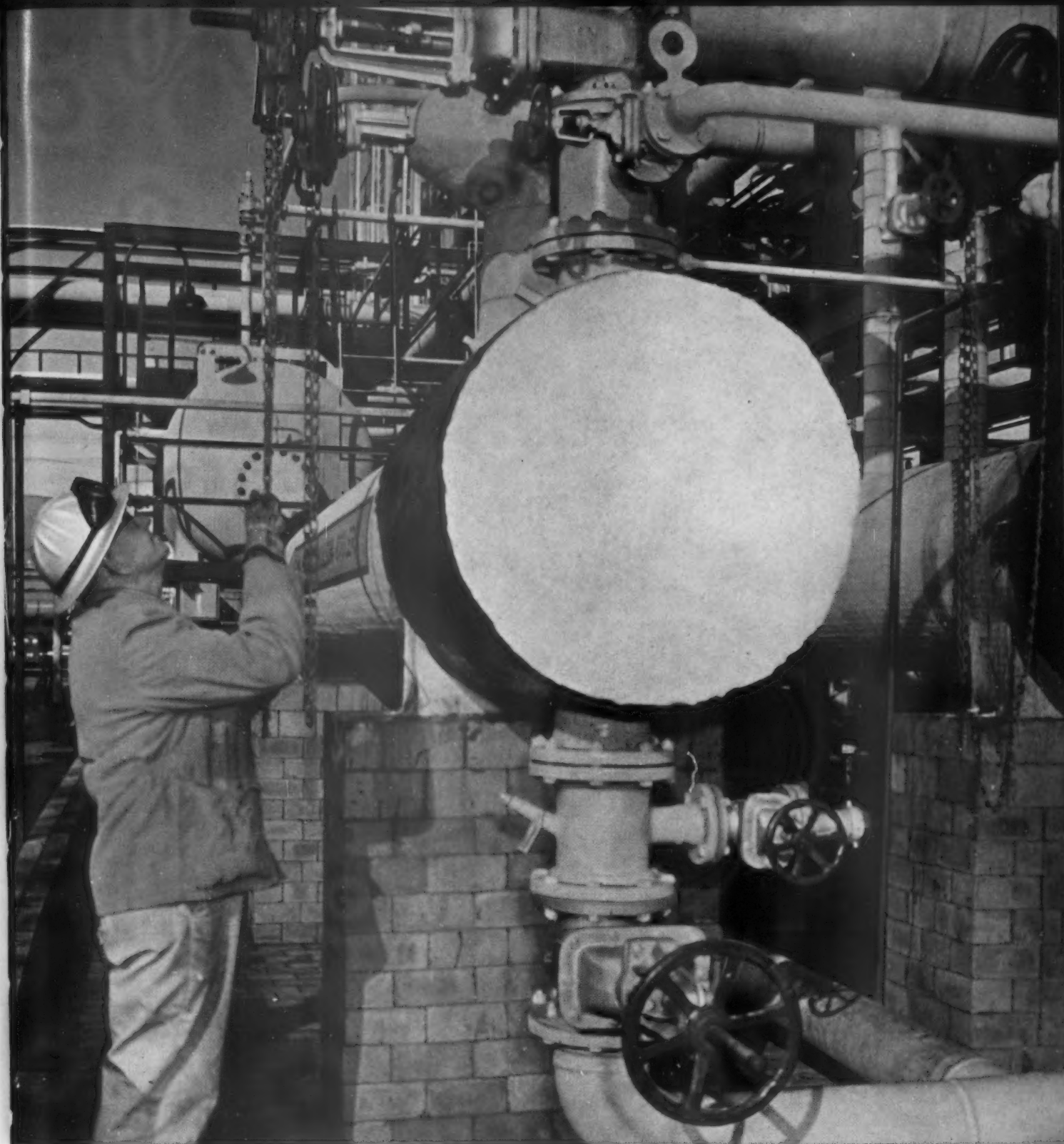
A portable hand dispenser, designed especially for such jobs as splicing papers, films, foils or cloth during manufacturing is announced by Minnesota Minning & Mfg. Co., Dept. J5-306, St. Paul, Minn. It handles double-coated tape such as "Scotch" brands No's 405, 400 or 666. It holds 60-yard rolls of these tapes on 3-in. cores in 1/2", 3/4" or 1" widths. The tape is applied during use by simply drawing the dispenser across the surface to be taped. A tension wind-up spool strips the liner from the roll while the tape passes under a knurled roller and silicone rubber pressure roller to the surface.

Circle No. 60 on Inquiry Card—Page 17

For More Information Circle No. 260  
on Inquiry Card—Page 17→

**PURCHASING**





## Closing the gate on hard-to-hold hydrocarbons

At Esso Standard Oil's Bayway Refinery light hydrocarbons are used extensively at a wide range of temperatures and pressures.

Light hydrocarbons are hard to "hold," but the self-adjusting wedge design on Aloyco gate valves insures tight shut-off. Corrosion-resistant Aloyco valves — like the red-wheeled, chain-

operated gate valve above — are used throughout many process units.

You'll see many more of them on key jobs at leading petroleum, processing and chemical plants throughout the country. What about your corrosive-handling problems? Write Alloy Steel Products Company, Inc., 1301 West Elizabeth Avenue, Linden, New Jersey.



Subsidiary of Walworth Company



**Quiet, smooth, perfect performance...**  
**in home laundry equipment using **SKF**® ball bearings**  
 .....

Leading manufacturers of home laundry equipment  
 (names on request) rely on **SKF** Single Row, Deep Groove  
 Ball Bearings for quiet, smooth-running performance.

Whatever your product, it will pay you, too, to switch  
 to **SKF** anti-friction bearings and get the *plus values*  
 which are built into every one. 7730

**SKF—EVERY TYPE—EVERY USE**

**SKF**

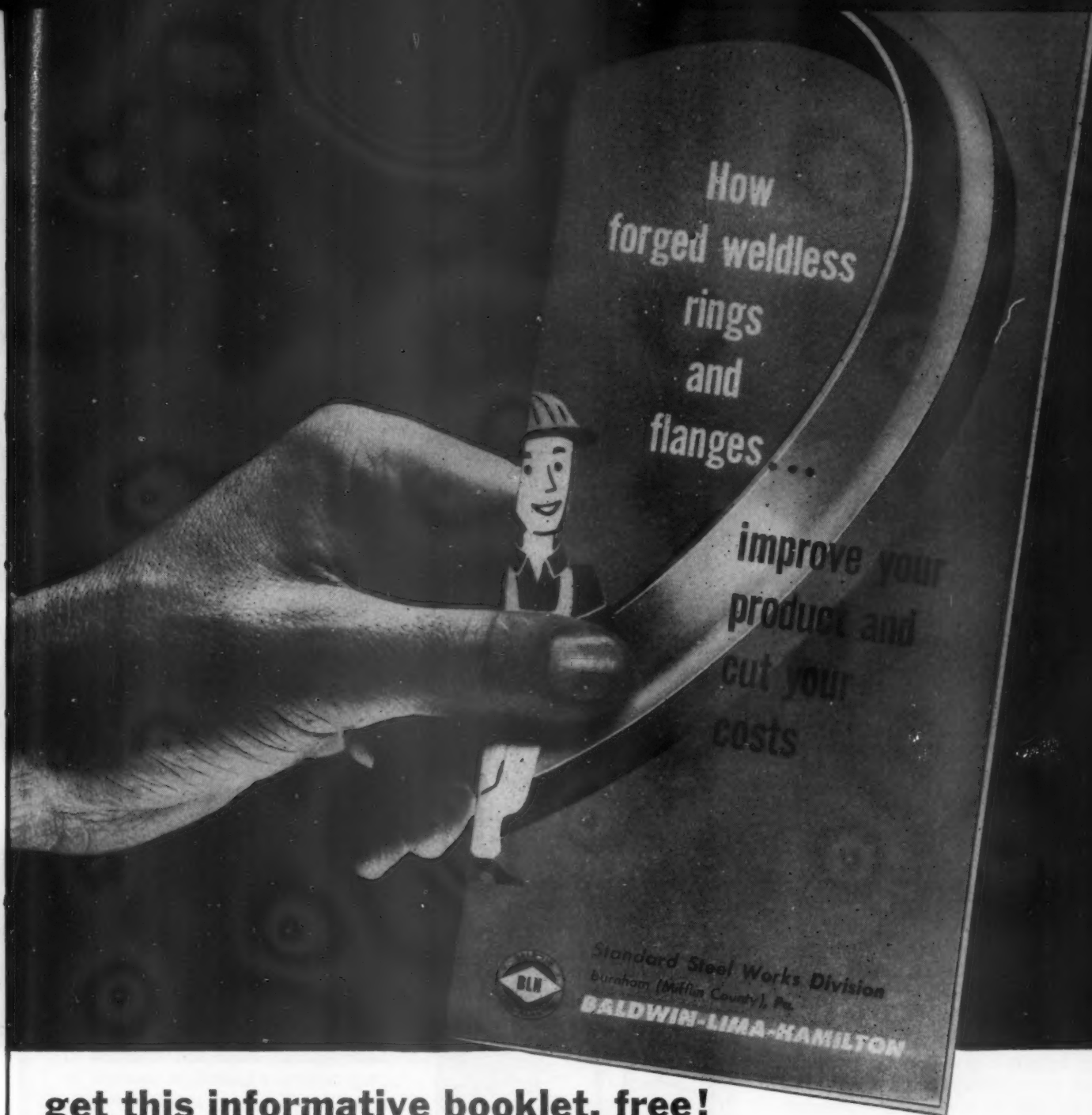
- Ball Bearings
- Cylindrical Roller Bearings
- Spherical Roller Bearings
- Tapered Roller Bearings (*"Tyson"*)

\*Reg. U.S. Pat. Off.  
 Tyson Bearing Corporation

**SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.**

For More Information Circle No. 261 on Inquiry Card—Page 17  
 180

For More Information Circle No. 262 on Inquiry Card—Page 17→  
 PURCHASING



## get this informative booklet, free!

When you consider a change in your product, you expect that change to make money for you or to save money for you.

It's quite possible that Standard Steel forged weldless rings and flanges will do *both*.

They improve your product, thus making your sales task a little easier, and they cut your manufacturing costs. In many cases, first cost may be less than the component you now use, and invariably machining time is less.

From this little booklet, you can see in five minutes how Standard Steel forged rings and flanges will fit into *your* picture. Send the coupon now.



### STANDARD STEEL WORKS DIVISION BALDWIN-LIMA-HAMILTON

DIVISIONS: Austin-Western • Eddystone • Hamilton  
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Dept. 8636, Standard Steel Works Division  
Baldwin-Lima-Hamilton Corporation, Burnham, Penna.

Without any obligation on my part, send me your bulletin 10,000.

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CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



# office equipment

## and supplies



Smith-Corona Inc., Syracuse, N. Y., has introduced a brand new typewriter known as the Pace-maker. While basically an office typewriter, it is intended to fill the gap between portable typewriters and present-day office machines. It has an all-around steel frame and is equipped for desk clamps. It is available in either pica or elite type, with certain other type styles available at extra cost.

Circle No. 61 on Inquiry Card—Page 17

A new group of lighting fixtures especially designed for modern low ceilings have been introduced by Sylvania Electric Products Inc., Wheeling, W. Va. They are known as the Mohawk series and are available in four different styles of shielding. They are available in two widths; the Chief, which is 13 $\frac{3}{8}$ " wide; and the Super-Chief, which is 23 $\frac{3}{4}$ " wide. The shielding can be obtained in

the form of plastic louvers, metal louvers, dished plastic, or a low-brightness lens. The units, in both four and eight foot lengths, are only 3 $\frac{7}{8}$ " deep.

Circle No. 62 on Inquiry Card—Page 17

A new office chair is being introduced by The B. L. Marble Chair Co., Bedford, Ohio. Known as the American Banker, it is a



modern design aimed at over-all acceptance similar to that accorded Marble's Bank of England chairs. It has graceful tapering legs influenced by modern Swedish design. The chairs are made of selected American black walnut and are available upholstered with polyurethan foam.

Circle No. 63 on Inquiry Card—Page 17

A non-scarring, chromium plated, power pedal has been added to the redesigned MASO 2000-C business machine stand of Maso Steel Products Inc., Chicago.

Circle No. 64 on Inquiry Card—Page 17



Maso Steel Products, Inc., Chicago, is marketing electrically welded counter-high storage cabinets in two styles—with swing or sliding doors. They are formed of heavy-gauge steel and finished in chip-resistant baked-on enamel in metallic office gray or olive green. Shelves are adjustable on 2" centers, with no tools required for changes. Both models have precision-made locks, separate from the satin chrome finished handles. Dimensions are 42" high, 36" wide and 18" deep.

Circle No. 65 on Inquiry Card—Page 17

A new refinement in office automation, a method of housing and indexing strips of perforated paper tape and edge-punched cards in data processing operations, has been announced by Remington Rand, a division of Sperry Rand Corp., New York. It is an adaptation of Kardex, Remington Rand's visible record system.

Circle No. 66 on Inquiry Card—Page 17



*The Convention / by James Dwyer*

*"For further information, write..."*

There are many forms of business communication but the most potent of all, is still the letter.

A wide variety of Gilbert Quality Papers makes all written and many printed forms of business communication much more effective. There are crisp, cockle finish GILBERT BOND PAPERS of unmatched brightness for attention-getting letterheads and envelopes. Eye-appealing GILBERT ONIONSKIN PAPERS combine strength with light weight, ideal for air-mail stationery, copy sheets and postage-saving advertis-

ing literature. Light weight, with outstanding opacity for two-sided printing of insurance forms and price lists, is obtainable in GILBERT LAVENDER WHITE OPAQUE BOND. GILBERT SAFETY PAPER provides for added protection in colorfully printed checks.

And, in addition to their uses in record work, GILBERT LEDGERS and INDEX BRISTOLS are ideal for parts lists, instruction sheets and diagrams.


Ask your printing supplier about Gilbert New Cotton Fibre Quality Papers.

## Gilbert Quality Papers

**Bond, Onionskin, Ledger, Index Bristol, Manuscript Cover,  
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|  <span style="float: right;">B-07-5-110 2800-1-19-55</span> |           |           |                  |                   |                           | CAT. NO. |                               |
|--|-----------|-----------|------------------|-------------------|---------------------------|----------|-------------------------------|
| ARTICLE SCREWS 10-32 X 1/2" Lg. CAP SCREWS Allen Head  |           |           |                  |                   |                           | 310-140  |                               |
| A Parkett Screw Company  |           |           |                  |                   |                           | D _____  |                               |
| B J. Johnson Company   |           |           |                  |                   |                           | E _____  |                               |
| C Jackson Screw Company  |           |           |                  |                   |                           | F _____  |                               |
| DATE   | PUR. FROM | P. O. NO. | QUANTITY ORDERED | QUANTITY RECEIVED | LIST PRICE                | DISCOUNT | REMARKS                       |
| 1-5-56   | A         | 23648     | 400              | 405               | 3.75/C                    | 25%      | ✓ Dept. 9K                    |
| 1-19-56  | B         | 24920     | 300              | 300               | 3.75/C                    | 25%      | ✓ Work Control Ctr. 48-2447   |
| 2-8-56   | C         | 25333     | 500              | 450               | <del>4.00</del><br>3.75/C | 20%      | ✓ " " " 44-2346               |
| 3-2-56   | B         | 26172     | 250              |                   | 4.00/C                    | 25%      | Dept. 11D                     |
|  |           |           |                  |                   |                           |          | (Red check mark indicates     |
|  |           |           |                  |                   |                           |          | order is complete and invoice |
|  |           |           |                  |                   |                           |          | has been received and passed  |
|  |           |           |                  |                   |                           |          | for payment.)                 |

Gillette's purchase record card highlights condensed information for quick reference in guiding future purchasing activity on specific items.

## Availability of Records Improves Buying Efficiency

By F. J. Hines

Purchasing Agent, Gillette Safety Razor Co., Boston, Massachusetts

ONE OF the most valuable record systems of the Gillette Safety Razor Company is a simple 5" x 8" purchase record card housed in electrically operated rotary files. It is a system that provides immediate access to important, condensed information vital to the efficient operation of the seven-man department.

With such a system, it is clearly evident that its prime value lies in its availability for reference, plus prompt recording of current data. If information is not readily available, or not kept up-to-date, then it becomes nothing more than just another recording of purchasing transactions.

The importance of the system becomes clearer when one realizes that the Boston plant of Gillette purchases more than 40,000 different items yearly. And, with repeats, purchase orders may run as high as 75,000.

What the card contains is quite simple. First of all, it lists the item



recorded, as well as the item's catalog number. Thus, it is easy to track down information either through the alphabetical filing by commodity, or through the numeric sequence of catalog number. In some cases, if the item is for special stores, it may also be listed in that manner.

In addition to basic filing information, the card lists the vendors or suppliers (space is provided for six), purchase order numbers, quantity ordered, quantity received, list price, discount, and any remarks pertinent to the specific commodity.

While departmental copies of purchase orders, naturally, provide more specific information, for quick and ready reference for basic information, the 5" x 8" card is unsurpassed.

In addition to their use for reference on prices, discounts, etc., for commodities, the cards are also used to verify incoming orders and checked before approving payment vouchers on incoming shipments.

Originally, these cards were kept in two tub files. However, this proved unsatisfactory as the records were not too accessible. Part of the problem was that only one person at a time could work on the cards. Thus, if one of the clerks were posting, any reference by a buyer meant interrupting the posting operation. This led to errors, misfiling, etc.

An attempt at solving this bottleneck was made with the installation of six manually operated Revo-files of Mosler Safe Co. These proved to be quite an improvement. Reference was easier, and errors decreased. However, since each Revo-file held 5,000 cards, filing, posting and general maintenance of the records required the services of two clerks.

While the system has been in operation at Gillette for some time, the improvement in its accessibility made it a valuable source of information for many other departments.

The next step was toward a

degree of automation. That is, purchasing installed a completely electrical and automatic Mosler Roto-File. This device consists of a battery of eight independently operated drums, which are moved clockwise or counter-clockwise by simply pressing a lever. Each one of the eight drums holds 5,000 cards and the entire battery becomes easily accessible to as many as three people simultaneously.

The big factor helping the system was the improvement in speed of posting.

Oddly enough, this bigger system required only one clerk for posting all items.

Since each card contains a complete two-year history of purchase activity on the commodity, considerable posting is necessary to maintain the cards. In fact, in one morning the clerk posted 453 items.

Naturally, also, each commodity card goes through several posting

operations. First of all, every purchase commitment is posted to its respective card as soon as the order is placed. Subsequent postings are made covering quantity delivered and any variances from the original commitment as to price or discount.

Thus, immediately available to the department is a running record of purchase activity on all commodities purchased by Gillette.

In addition to just improving the efficiency of the purchasing department as a whole, the system has given us accuracy and consistency. The records are always up-to-date and error-free, important considerations for any purchasing department. Thus, at our fingertips, immediately available, are complete, accurate pieces of data which help everyone in purchasing to do a better job—to provide Gillette with the best material and the best price.



Elmer Weaver, left, and Frederick Blanchard, assistant purchasing agents, check commodity data without disturbing the posting operations of Mary Ash, purchasing's clerk. The file is Mosler's electrically operated Roto-File, with 40,000 card capacity.

Prominent Users of Strathmore Letterhead Papers: No. 123 of a Series



*A bird's-eye view of Evergreen Plaza, cited for its outstanding architectural contribution to the Chicago area.*

## Shop for Quality!

**Modern merchandising** puts great importance upon a quality approach to the customer. Witness Chicago's Evergreen Plaza, which includes among its many superlatives an arresting letterhead on Strathmore Writing—one of Strathmore's fine business papers. Truly, nothing conveys a firm's good reputation so soundly as the look of its correspondence, and no letterhead paper so distinctly says *quality* as Strathmore.

EVERGREEN PLAZA is one of the most advanced retail developments in the country, with building and operating methods that have been studied by visitors from all over the world. Its fifty-two stores serve a good deal of suburban Chicago with the finest merchandise and with every possible convenience.

STRATHMORE LETTERHEAD PAPERS: STRATHMORE PARCHMENT, STRATHMORE SCRIPT, THISTLEMARK BOND, ALEXANDRA BRILLIANT, BAY PATH BOND, STRATHMORE WRITING, STRATHMORE BOND, ENVELOPES TO MATCH CONVERTED BY OLD COLONY ENVELOPE CO. STRATHMORE THIN PAPERS: STRATHMORE PARCHMENT ONION SKIN, STRATHMORE BOND ONION SKIN, STRATHMORE BOND AIR MAIL, STRATHMORE BOND TRANSMASTER, REPLICA.

# STRATHMORE

Makers of Fine Papers

STRATHMORE PAPER COMPANY, WEST SPRINGFIELD, MASSACHUSETTS  
For More Information Circle No. 264 on Inquiry Card—Page 17

office  
equipment



A new type desk sign featuring name and title of executive or staff members has been introduced by The Wama Co., Baltimore. The sign, trademarked "Tell-A-Name", is 6" wide and 1 1/8" high. It is made of satin hardwood, trimmed in aluminum. Its base is finished in grey, black or mahogany, while the name plate is etched in white on black formica.

Circle No. 68 on Inquiry Card—Page 17



One of the latest introductions to the fan market is a 16" oscillating fan with a "Super Safety Guard" produced by Fasco Industries, Inc., Rochester, N. Y. It is called Model 167-SS, and has a two-piece safety guard made of wire rings on 1/2" centers. It has a choice of three speeds—high/1520 cfm, medium/1210 cfm, or low/940 cfm. The fan weighs 24 lbs. and takes 102 watts. It is finished in neutral harmony gray. It bears the UL label.

Circle No. 69 on Inquiry Card—Page 17

## ATTENTION ALL PURCHASING EXECUTIVES:

This Modern Manual Shows Latest Methods  
For Saving Time And Money In Overall  
Purchasing Operations!



GET YOUR  
**FREE COPY**  
WITHOUT DELAY!

The new up-to-date edition of this methods manual, which has been used by thousands of purchasing officials to develop more efficient, less costly methods, is now ready. It includes new case histories on the latest time-saving methods used by purchasing departments in leading companies. For example, one company reports in detail how improved follow-up control of its purchase

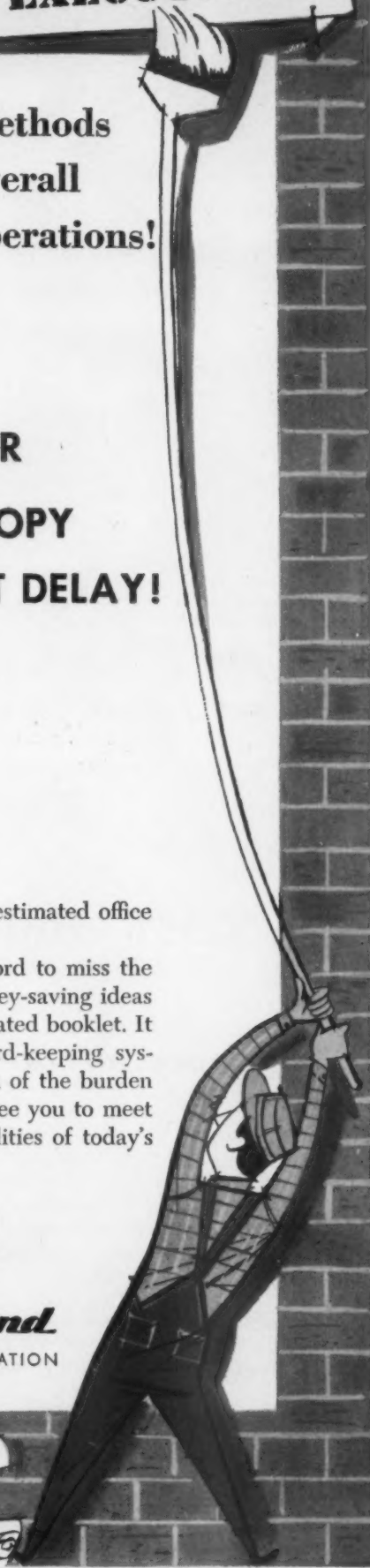
orders resulted in "an estimated office time saving of 80%!"

You simply can't afford to miss the valuable time and money-saving ideas in this new fully illustrated booklet. It demonstrates the record-keeping systems which relieve you of the burden of routine details... free you to meet the broader responsibilities of today's purchasing work.

*Write Remington Rand, Room 1838, 315 Fourth Avenue, New York 10. Just ask for booklet X1202.*

**Remington Rand**

DIVISION OF SPERRY RAND CORPORATION







letters

look better on *brighter, whiter*

# WESTON BOND

Before you buy more letterheads, compare brighter, whiter WESTON BOND with your present letterhead paper. You'll agree, letters look cleaner, neater, more impressive on this brighter, whiter rag content bond. Ask your printer to use it.

Write for  
Sample Book  
Address Dept. PN



BYRON WESTON COMPANY  
DALTON, MASSACHUSETTS

Makers of Fine Papers for Business Records Since 1863

For More Information Circle No. 266 on Inquiry Card—Page 17

Copies of

## "COST REDUCTION EDITION"

are available to

**PURCHASING PERSONNEL**

There is a limited supply of PURCHASING Magazine's May "Cost Reduction Edition" available for you and your department. Remember—this May issue is a valuable source of data that will help any one in the performance of his particular purchasing duties. It provides information and techniques helpful in cutting costs in the purchasing operation.

Because it is a reference book that can be used throughout the year, we get many requests for copies from purchasing personnel of all levels. Order YOUR Copy now while a supply is still available.

**We have 100 copies which we are releasing for \$1.00 each.  
Order now by writing direct to—**

Alice Thumann, Circulation Department

**PURCHASING MAGAZINE**

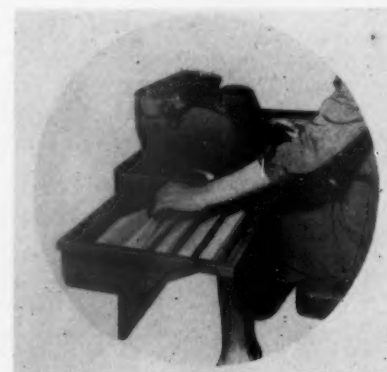
205 E. 42nd Street, New York 17, N. Y.

office  
equipment



Felt & Tarrant Mfg. Co., Chicago, has added the 10-key Comptograph "202 M" to its line of calculating-adding machines. The new model, a companion to the Comptograph "202", has a semi-automatic multiplying feature which permits the printing of both factors and the answer on the tape in just two lines. This permits the operator to check all three factors, at a glance, in each multiplication problem. The machine has a listing capacity of 11 digits, and a totalling capacity of 13 digits.

Circle No. 70 on Inquiry Card—Page 17



A new type stationery compartment is being manufactured by The Globe-Wernicke Co., Cincinnati. Called the Sec-Tray, it is mounted on channels supported from the bottom of the typewriter platform. Thus, while it is readily accessible, it is easily slid to a concealed, out-of-the-way position.

Circle No. 71 on Inquiry Card—Page 71

# *a fine office*

**DOESN'T  
JUST HAPPEN**

Someone Has Dreamed About it if it's a truly fine office—and carefully considered flow of work, relationship of work areas, even the desirable proximity of divisions. Then he put those plans on paper and did it so easily because he had at hand a Security Plan Rule.

He Has Provided a finer office too, if he has specified Security Crestline—desks, files and tables, available in a fine range of colors—for this superb equipment is engineered throughout for top efficiency and built for the practicality of life-time service.



**SEND TODAY**, on your letterhead, for a folder in full color showing the 4 superb lines—Crestline—T.D. Series—4 Leg Line—Versa Line—and the Security Plan Rule which will help you greatly, in doing a fine new office or rearranging now, for greater efficiency and satisfaction.

## **SECURITY STEEL EQUIPMENT CORPORATION**

525 Middlesex Road, Avenel, New Jersey

Please send me your full color brochure and your Office Plan Rule.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# association news

## New Officers . . . . . At Local Associations



**KALAMAZOO VALLEY**—(left to right) Don J. Corre, Ingersoll Kalamazoo Division, Borg-Warner Corp., secretary; Robert A. Johnson, Panelyte Division, St. Regis Paper Co., national director; Samuel Folz, The Brundage Co., president; John Montcalm, Harry W. Taylor Co., treasurer; Howard Dean, Kalamazoo Paper Box Co., vice president.



**BALTIMORE**—(left to right) Robert C. Rex, Glenn L. Martin Co., national director; E. Raymond Bender, Calvert Distilling Co., vice president; Richard L. Yeagle, Franklin Balmar Corp., president; Frank J. McHugh, Jr., Crown Cork & Seal Co., secretary; Wilmot A. Snoke, Crown Central Petroleum Corp., treasurer; J. M. Kalista, Koppers Co., Inc., alternate national director.

**NEW ORLEANS**—(left to right) T. E. Ducos, first vice president; Gordon U. Sanford, president; Louis H. Moss, second vice president; (standing) William East, alternate national director; Frank J. Basile, secretary; G. A. Lyncker, treasurer; G. E. Wintle, national director is not shown.

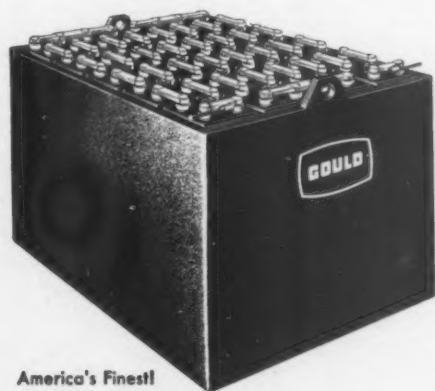






**"They made me  
a V.P. for  
specifying**

**GOULD**  
*Research-built*  
**BATTERY  
POWER"**



America's Finest!  
**GOULD**  
Industrial Truck Batteries

Always Use Gould-National Automobile  
and Truck Batteries

**A** healthy reward awaits *anyone* who chooses Gould battery power. Not only is battery power the most economical power you can buy, but Gould power gives you extra performance and extended service life possible only through years of basic and applied battery research.

Another reason for specifying Gould is Gould's Field Engineering Service. Covering all industrial centers in the nation, it's the finest in the industry . . . helps keep your batteries working at top capacity . . . adds months to their normal life. Get more power per dollar with Gould research-built battery power!

**"BETTER BATTERIES THROUGH RESEARCH"**

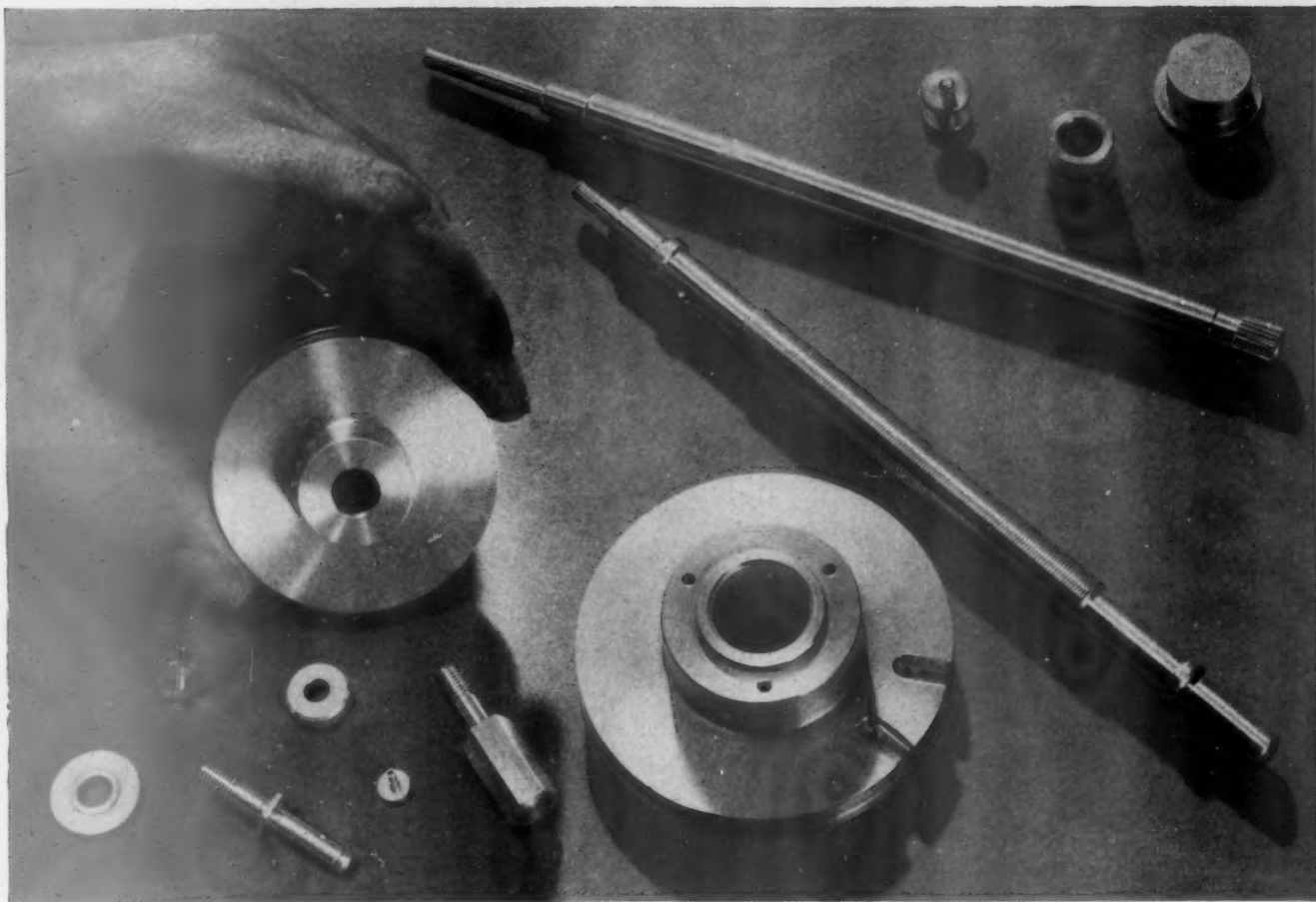
©1956 Gould-National Batteries, Inc.

AUGUST, 1956

For More Information Circle No. 268 on Inquiry Card—Page 17

**GOULD**  
**BATTERIES**

GOULD-NATIONAL BATTERIES, INC.  
Trenton 7, N. J.



TYPICAL PARTS made of Alcoa Aluminum Screw Machine Stock at Dictaphone Corporation include long, slender feed screws that used to present thread-

ing problems in steel. Tolerances of three tenths are not unusual. High stock removal is routine with aluminum.

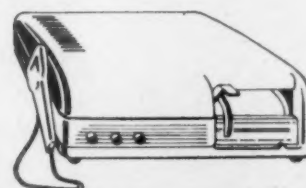
## HOW DICTAPHONE CORPORATION\* DESIGNS FOR SALES WITH ALCOA ALUMINUM SCREW MACHINE STOCK

The day the dictating machine left the office and started traveling with the salesmen, surprising things happened. At Dictaphone Corporation, for example, their famous Time-Master dictating machine went on a reducing diet. From 20 pounds, this versatile machine shrank to 12.4 pounds. Aluminum screw machine parts played a major role in making the Time-Master light and portable. But, most important are the other advantages that came to Dictaphone with their switch to Alcoa® Aluminum. "Problem parts" in stainless and mild steel suddenly became routine when Alcoa Aluminum Screw Machine Stock was used. Tool and wheel life increased. Rust problems ended.

While weight reduction may not be the primary consideration for your product, the economic savings and many added advantages of aluminum can solve other problems. Low material costs (three times as many pieces from each pound), excellent machinability, ease of finishing and high resistance to corrosion will make Alcoa Aluminum Screw Machine Stock your choice for non-

rusting parts. If you need high heat or electrical conductivity, aluminum has these, too.

These facts practically dictate a hard look at aluminum for the majority of your screw machine parts. To help you take that look, qualified screw machine experts are available at your local Alcoa sales office listed under "Aluminum" in your classified phone book. Aluminum Company of America, 867-H Alcoa Bldg., Pittsburgh 19, Pa.





Mr. J. S. Decker, Mr. E. J. Kwantz and Mr. J. S. Kemp (left to right) discuss purchase of materials for Dictaphone's new Time-Master.



Mr. T. Chanoux (standing) talks over the design of a Time-Master part with Mr. W. G. Deschenaux.



On-the-job production conference between Mr. S. J. Redmond and Mr. J. A. Gunger.

## IN PURCHASING

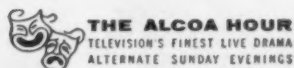
Mr. E. J. Kwantz, Buyer, says, "One reason we do business with Alcoa is because they study our problems and make helpful suggestions. In cases of extremely tough delivery requirements, Alcoa expedites quickly from their mills and warehouses. Availability and quality are big advantages in buying from Alcoa. We find scrap disposal easier with aluminum than with steel."

## IN DESIGN

Mr. Theodore Chanoux, Chief Production Engineer, says, "Five years ago we would have been astounded at what we are doing with aluminum today. In addition to weight savings, aluminum screw machine stock helps us solve other design problems. Acme threads were impossible in stainless parts; they're simple with aluminum. Where we have to specify plating or other special finishes for ferrous parts, simple anodizing of aluminum saves us money. Some of our machined parts are bearing surfaces. Here, too, aluminum performs well."

## IN PRODUCTION

Mr. Matthew Luciani, General Foreman, says, "We can chase an Acme thread on aluminum with two passes compared to six or seven with stainless steel. Tool and wheel life is longer. Lubricants used with aluminum don't get rancid and smelly. Our operators like this, and they like the fact that aluminum chips don't cut them. We make about 80 aluminum parts for the Time-Master at tremendous production savings. We run machines at top speeds and feeds. The parts don't rust in storage."



Your Guide to the Best  
in Aluminum Value





# association news



**PITTSBURGH** — David A. Riggs of Westinghouse Electric Corporation has been elected president of the Pittsburgh Purchasing Agents Association for 1956-57. Last year's president, H. E. Cooley, National Supply Company, takes over as national director.

**NEW YORK**—Seated left to right, James H. Leonard, executive secretary; David S. Gibson, Worthington Corporation, first vice president; William F. Rae, Jr., The Mennen Company, president; Frank S. Romanse, The Babcock & Wilcox Company, second vice president; Edward M. Krech, J. M. Huber Corporation, national director. Standing, Joseph Stranad, National Lead Company, director; Lewis A. Norris, New York Stock Exchange, director; George W. Baker, The Port of New York Authority, director; Charles M. Feldmann, Kennecott Copper Corporation, director; John R. Zehner, Turner Construction Company, director; Richard N. Chapin, Air Reduction Company, Inc., director. Edward B. Fielis, treasurer, was not present when the picture was taken.



**CENTRAL IOWA**—Alvin Rempp, Dun-Lap Mfg. Co., secretary; Fuzz Diemer, Langan Paper Co., treasurer; Herb Lubke, Solar Aircraft Co., first vice president; Bob Sampson, Beam Mfg. Co., president; Matt Karpan, Waterloo Valve Spring Compressor Co., vice president; Lee Howlett, Firestone Tire & Rubber Co., national director.

*faster*

# Royal Blue has won acceptance *faster* than any other wire rope in Roebling history



John A. Roebling's Sons Corporation, Trenton 2, N. J., Subsidiary of The Colorado Fuel and Iron Corporation BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 5216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • PITTSBURGH, 1733 HENRY W. OLIVER BLDG. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6.



**"O.K. . . . why should I buy  
Flexon® Metal Hose?"**

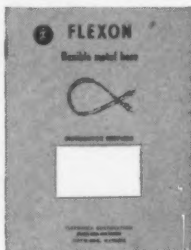


Confidentially, this young fellow really isn't a purchasing agent. As a matter of fact, he's between jobs at the moment—but his question is one that should be asked by men whose business is buying.

If your business is buying flexible metal hose, Flexonics has some answers that can prove profitable for you. Your Flexonics Distributor stocks the most complete line of flexible metal hose products offered by a single manufacturer. A nationwide network of Flexonics Distributors, backed by strategically located warehouse and factory stocks, assures you of that "right now" delivery you often hope for and seldom get.

Over 54 years of manufacturing experience . . . volume production with modern facilities . . . continuous research and quality control . . . these are the factors that make Flexonics products the finest in the field at the lowest price consistent with top quality. And to assure complete satisfaction, Flexonics Corporation guarantees the material and workmanship of every piece of Flexon metal hose.

We believe you will realize a savings of time, trouble and dollars when you buy Flexon metal hose from your authorized Flexonics Distributor. Let him help make your job easier.



Catalog 152 gives full data on all types of Flexon hose. Ask your distributor for a copy or write direct.

G-35

**FLEXON®  
QUALITY**

proved in service and  
backed by over 54 years  
manufacturing  
experience

**Flexonics Corporation**  
CHICAGO METAL HOSE  
DIVISION

1314 S. THIRD AVENUE, MAYWOOD, ILLINOIS

FORMERLY CHICAGO METAL HOSE CORPORATION

Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components.

In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

For More Information Circle No. 271 on Inquiry Card—Page 17

## association news

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hamton Container Company,  
Inc.

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PURCHASING

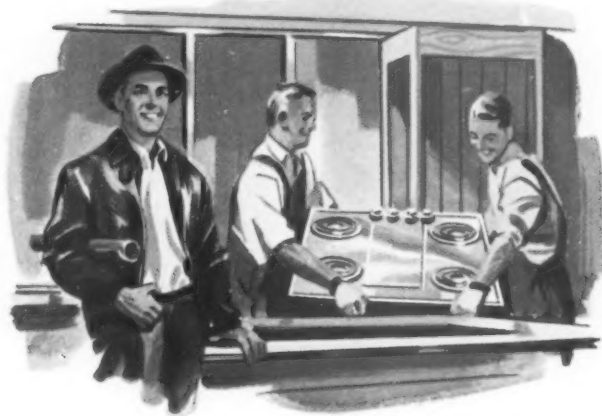


in the home  
everybody  
benefits from

# STAINLESS STEEL



THE ARCHITECT designs Stainless Steel into windows, kitchens, work surfaces, ovens and other important places because he knows there is nothing like Stainless for clean, lasting beauty.



THE BUILDER has had long experience with Stainless Steel. It's easy to install, does not chip or peel, and its beautiful finish presents no problem on matching or replacement.



**the owner** likes living with Stainless Steel. It's always gleaming and beautiful, cleans with a wipe, and lasts forever. And, to complement her kitchen she loves to own those shiny pots, pans, tableware, and appliances, all made of Stainless Steel.

# McLOUTH STAINLESS STEEL



FOR THE PRODUCT YOU MAKE TODAY AND THE PRODUCT YOU PLAN FOR  
TOMORROW SPECIFY McLOUTH HIGH QUALITY SHEET AND STRIP STAINLESS STEEL

McLOUTH STEEL CORPORATION DETROIT, MICHIGAN • MANUFACTURERS OF STAINLESS AND CARBON STEELS



**FAST DELIVERY** of QD sheaves and Worthington-Goodyear V-belts is assured. Warehouses stock 872 sizes and a total of 75,000 different V-drive combinations.

## How Worthington eliminates problems in ordering Multi-V-Drive components



**WAREHOUSES LOCATED AT:** Kearny, N.J. • Oil City, Pa. • Seattle  
San Francisco • Los Angeles • Denver • Tulsa • Ft. Worth • Houston  
New Orleans • Chicago • Cleveland • Atlanta, Ga.

**EXPANDED FACTORY WAREHOUSE FACILITIES** means you never need wait for your sheave or belt order to be filled. Stars show location of warehouses; dots indicate approximate location of more than 300 distributors in major industrial areas.

You've probably heard plenty of good things about the Worthington QD sheave and Worthington-Goodyear V-belts.

But are you aware of Worthington's new, expanded facilities? They're designed to give you the speediest selection, delivery and service you could want.

The map shows where we've added fully-stocked warehouses. If you should ever be around Oil City, Pa., we invite you to stop in to see what we've done in streamlining our production facilities to keep those warehouses full as well as to maintain quality production of the famous QD sheaves.

You should, by now, have a copy of the Worthington Master Engineering Manual that makes sheave and belt selection easier than you ever imagined it could be. If you haven't received it, write us today. Worthington Corporation, Mechanical Power Transmission Division, Oil City, Pa.

MV.5.7

# WORTHINGTON



**SPECIFY THESE WORTHINGTON STANDARD PRODUCTS ON YOUR EQUIPMENT**

**Compressors • Pumps • Multi-V-Drives • Variable Speed Drives**

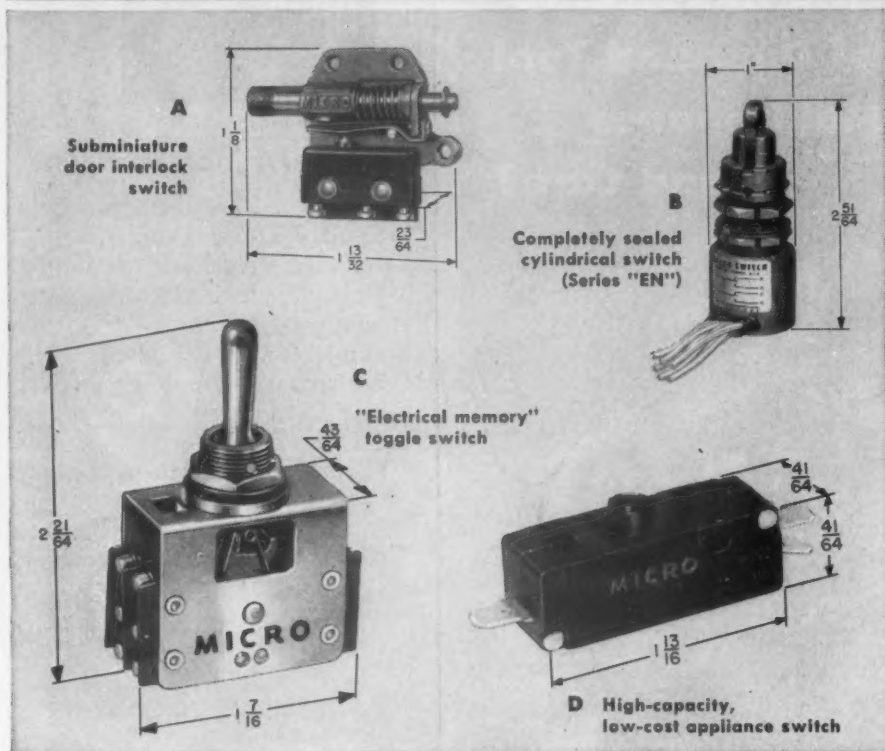
For More Information Circle No. 273 on Inquiry Card—Page 17

# MICRO

# precision switches



...THEIR USE IS A PRINCIPLE OF GOOD DESIGN



## A continuous flow of Precision Switch Developments anticipates Your design needs

MICRO precision switches are developed and built to meet specific requirements. Some designs call for the utmost precision, plus reliability. Other designs put long life and extreme reliability at the top of the list. Some must have all of these and more. Whatever YOUR requirement may be, MICRO SWITCH has a switch readily available or can work with you in its development.

Here are a few recent MICRO SWITCH developments to meet specific needs:

**A** The subminiature door interlock switch is for use where an extremely small assembly is desired to provide automatic cut-off of the power circuit when a cabinet door is opened. This switch assembly has been found extremely valuable on radio, radar, x-ray and other hazardous equipment where it is desirable to provide automatic protection to operating personnel. (Ask for Data Sheet P108).

**B** The MICRO SWITCH "EN" Series switches are capable of reliable, long-life performance under extreme environmental and mechanical conditions. They are completely sealed, cylindrical in shape and can be mounted wherever a through hole can be provided. Variations of the

"EN" are capable of actuation by almost any means (see right hand column). (Send for Data Sheet 105).

**C** This is the first of a new series of "electrical memory" toggle switches being introduced by MICRO SWITCH. They offer a completely new concept in switching remotely controlled circuits. They promise to simplify basic circuit designs of radar units, computers, aircraft control panels and similar devices. The switch indicates through a pilot light or buzzer which circuit was last actuated. (Send for Data Sheet 109).

**D** MICRO SWITCH now offers a new series of low cost plastic encased switches especially designed for use on domestic appliances. In addition to their small size and high electrical capacity, these switches are ruggedly constructed for hard service. They are readily adaptable for use with auxiliary actuators. (Send for Data Sheet 106).

## See the unusual design flexibility of the new MICRO Series "EN" switches



MICRO SWITCH Engineering service is available at nearby branch offices. A call can save you time and money.

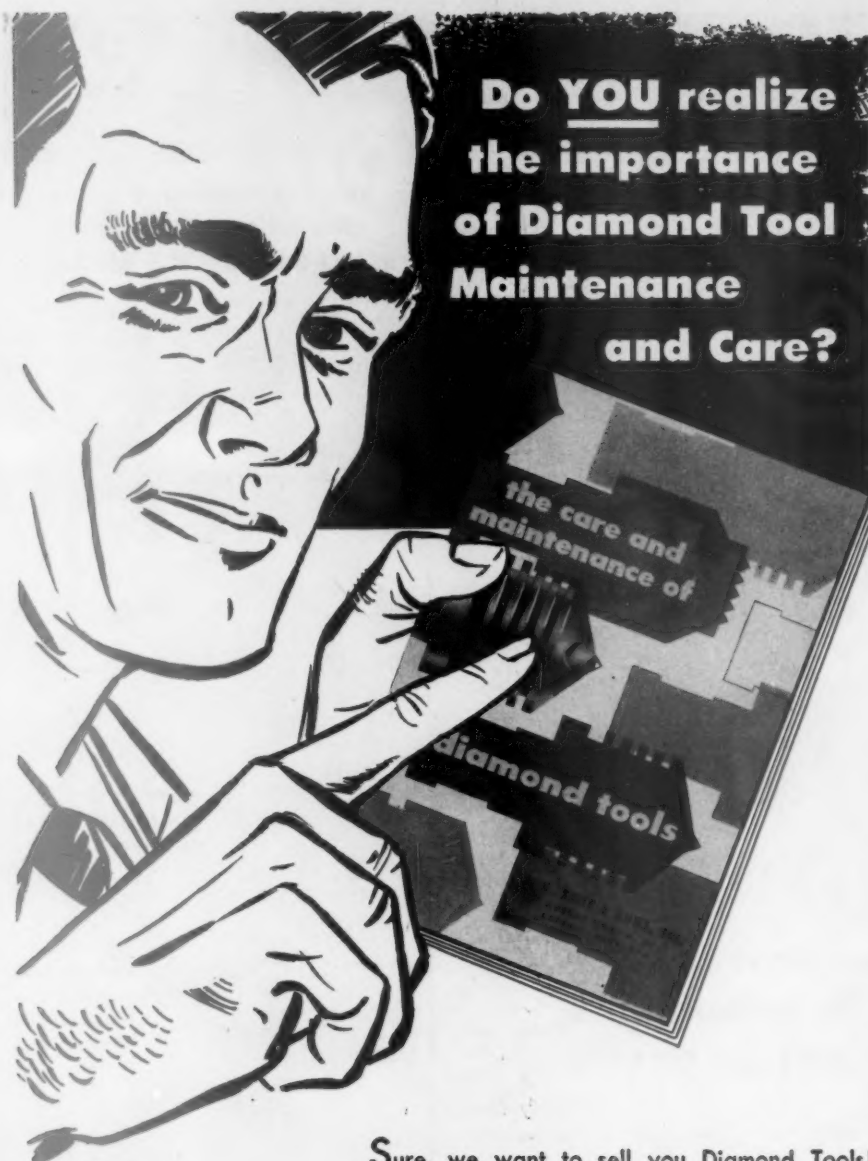
# MICRO SWITCH

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

In Canada, Leaside, Toronto 17, Ontario • FREEPORT, ILLINOIS







**Do YOU realize  
the importance  
of Diamond Tool  
Maintenance  
and Care?**



Stakeout Model



Cluster Model

Sure, we want to sell you Diamond Tools! However, we also feel there is a definite need of knowledge as to how to take care of the Diamond Tools you already own. That's why we have compiled, edited and printed a booklet which will help you with your diamond tool care and maintenance problems. It's yours for the asking. Merely write for your copy of "The Care and Maintenance of Diamond Tools."

And—when you're again ready to replace wornout tools and if you require engineering advice on industrial diamond products, consult J. K. Smit & Sons . . . We've been in this business since 1888.



**J. K. SMIT & SONS, INC.**  
HOME OFFICE AND PLANT  
MURRAY HILL NEW JERSEY

Additional plants in London, Paris, Amsterdam and Toronto, Canada

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Wooster Rubber Co.  
Director . . . R. C. Crumrine, The  
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Company  
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H. Campbell, North American  
Aviation  
Secretary . . . John J. McShane,  
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Belt Corporation  
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way, Federal Glass Corporation  
Director . . . C. H. Slauter, Ebco  
Mfg. Company  
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*"You're looking at Cora Gated"*

She's on the trucks  
that deliver the boxes  
that deliver the goods.  
For quality corrugated, be sure  
she's on the boxes you buy!



**HINDE & DAUCH**

Subsidiary of West Virginia Pulp and Paper Company

AUTHORITY ON PACKAGING • SANDUSKY, OHIO  
13 FACTORIES • 42 SALES OFFICES





# The Department Store of Steel

CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HAMMOND • INDIANAPOLIS • LANCASTER  
LOUISVILLE • MEMPHIS • NASHVILLE • NEW ORLEANS • NEW YORK • PITTSBURGH

*the steel you want  
...when you want it*

Prompt delivery is but one of the many services offered  
by your J & L Warehouse . . .

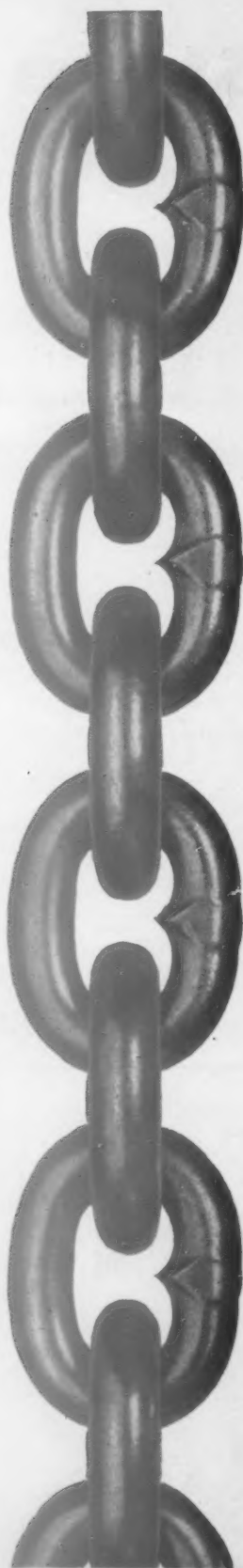
Put our complete facilities to work for you—for example, take  
advantage of our large stocks of cold finished steel in a diversified  
range of sizes and analyses. Let us serve *all* your requirements  
for steel quickly and efficiently.



The Department Store of Steel

**JONES & LAUGHLIN STEEL WAREHOUSE DIVISION**  
JONES & LAUGHLIN STEEL CORPORATION

DIVISION OFFICES      INDIANAPOLIS 7, INDIANA



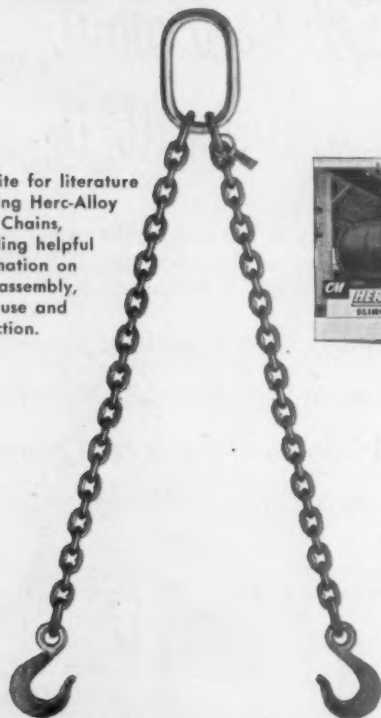
# **HERC-ALLOY**

## **SLING CHAINS**

● Herc-Alloy is the only exact-size alloy chain on the market. This uniformity gives you a lighter and easier-to-handle chain without any sacrifice in working load limit.

● Herc-Alloy, the original alloy steel chain, is available in running lengths as well as in all types and sizes of slings made to customer specifications.

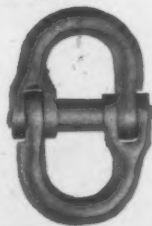
● Write for literature covering Herc-Alloy Sling Chains, including helpful information on their assembly, care, use and inspection.



● CM also produces a complete line of chain attachments and welded chain of all types including stainless steel and bronze.

## **Hammerlok® COUPLING LINKS**

● Assemble or rebuild your own Herc-Alloy sling chains with all components furnished by your local distributor. Hammerlok is simple, safe, reusable. New Herc-Alloy assemblies can now be ordered with welded or Hammerlok Coupling Links as desired.



# **CM**

HOISTS AND CHAIN

CALL YOUR CM CHAIN DISTRIBUTOR  
**COLUMBUS MCKINNON**

**CHAIN CORPORATION**  
Tonawanda, New York

Regional Offices: NEW YORK • CHICAGO • CLEVELAND  
In Canada: MCKINNON COLUMBUS CHAIN LTD.,  
Herc-Alloy® ST. CATHARINES, ONT.

## association news

### Wilmington



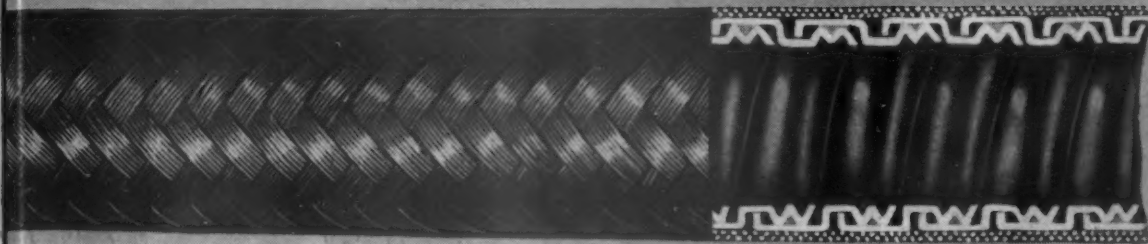
**Albert W. Gudal**

President . . . Albert W. Gudal,  
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III, Hercules Powder Company

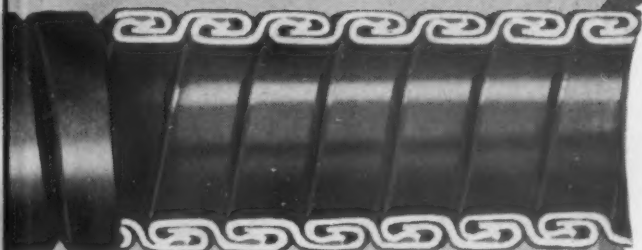
### Rock River Valley

President . . . P. J. Donohue,  
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Second Vice President . . . W. M. Hollingsworth, Geo. D. Roper Corporation  
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Director . . . G. E. Andrews,  
Barnes Drill Company  
Director . . . H. R. Wilde, E. D. Etnyre & Co.  
Director . . . F. D. Scully, Atwood Vacuum Machine Corp.

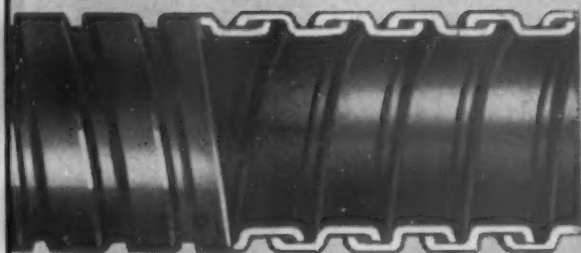
For More Information Circle No. 279  
on Inquiry Card—Page 17→  
**PURCHASING**



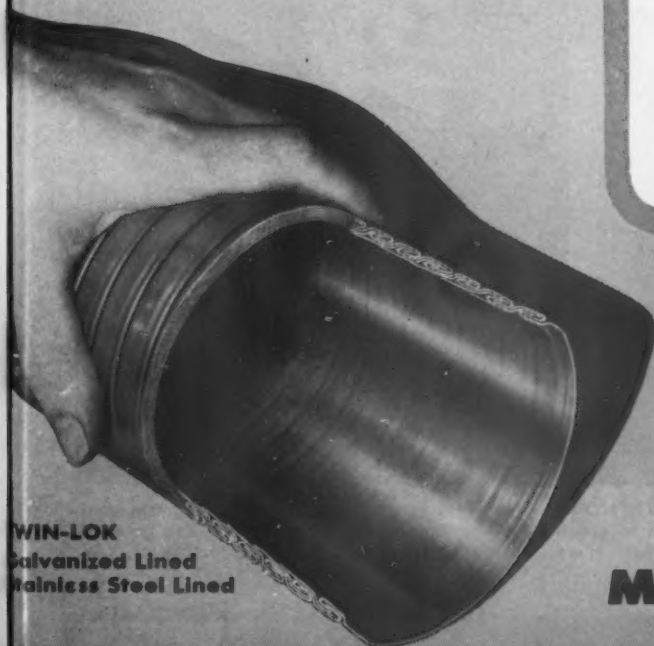
TYPE FP WIRE BRAIDED



HEAVY DUTY INTERLOCKED



**LIGHTWEIGHT SQUARELOCKED**  
Unpacked, cord packed, light asbestos  
packed, heavy asbestos packed



**WIN-LOK**  
Galvanized Lined  
Stainless Steel Lined

## **FLEXIBILITY**

### **DEFIES HEAT...FATIGUE ABRASION...LEAKAGE**

Penflex is ruggedly built hose with all of the flexibility required, plus the toughness and durability of metal. No matter how hot the material to be conveyed Penflex cannot be cooked like ordinary hose. It stubbornly defies rough abuse, abrasion and crushing.

From 1/8" I.D. to 24" I.D. . . . bronze, galvanized steel, or stainless steel . . . from an air compressor line to a diesel exhaust, Penflex makes them all for industry. And Penflex "Flexineering"—the science of applying flexible tubing to fit the particular needs of the job to be done—assures the right tube in each installation. When you require tubing or hose that is tight as a pipe, but flexible . . . safe at high temperatures . . . and free from metal fatigue, specify Penflex.

Penflex manufactures a complete line of four wall interlocked and seamless welded corrugated flexible tubing for industry. Write for your free copy of the booklet "Flexineering At Work."

Pennsylvania Flexible Metallic Tubing Company, Inc.,  
7218 Powers Lane, Phila. 42, Pa. Branch Sales Offices:  
Boston • New York • Chicago • Houston • Cleveland  
Los Angeles and Distributors in Principal Cities

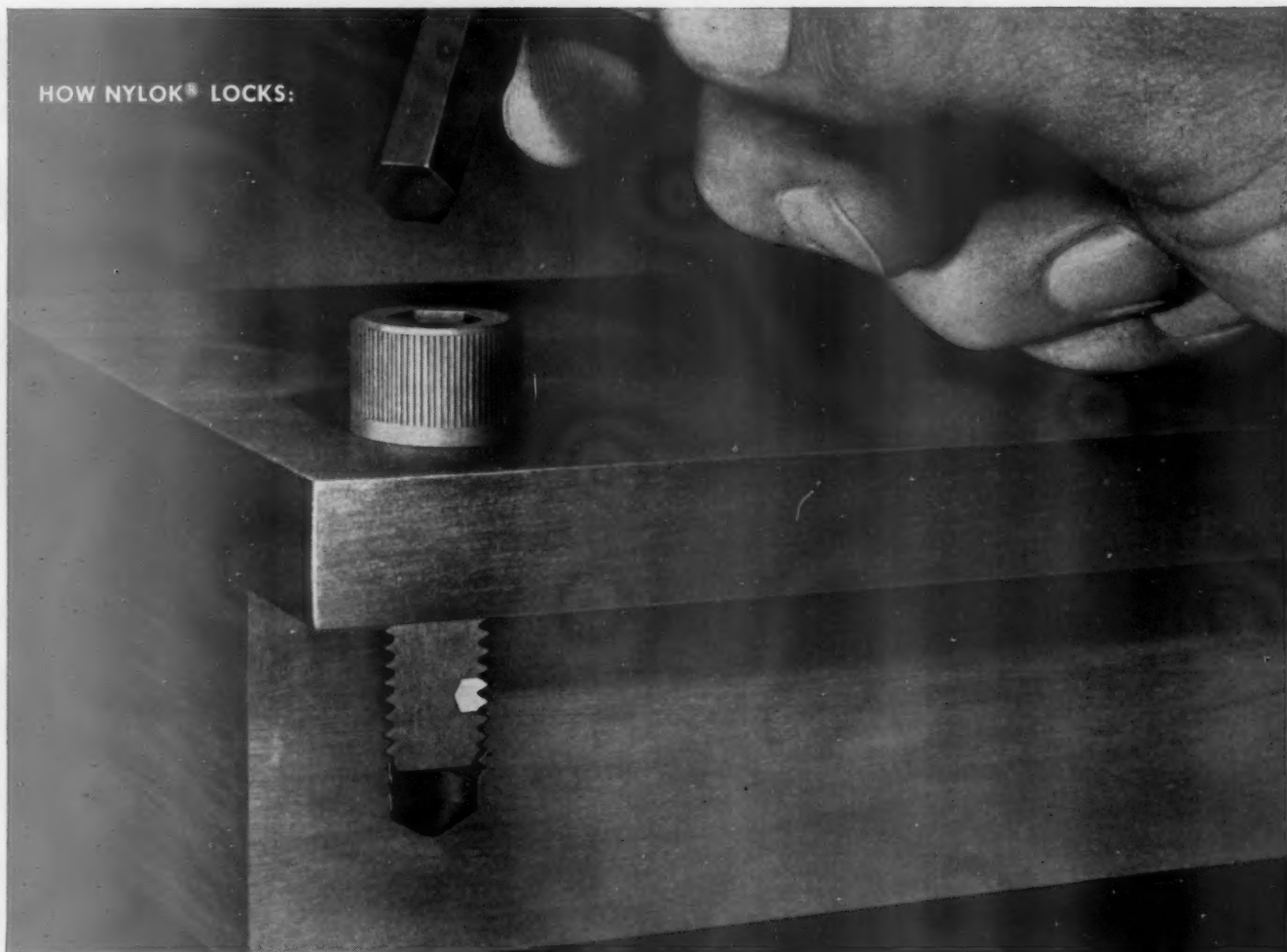
**HEART OF  
INDUSTRIES  
LIFELINES**

## **METALLIC TUBING**

# **P E N F L E X**

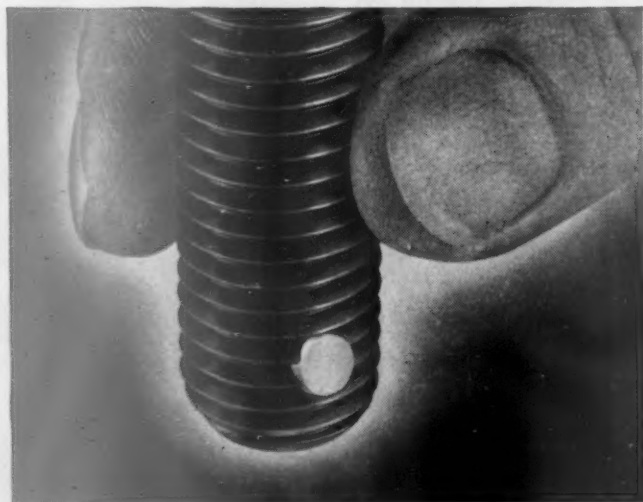


# NEW—a complete line of socket screw products

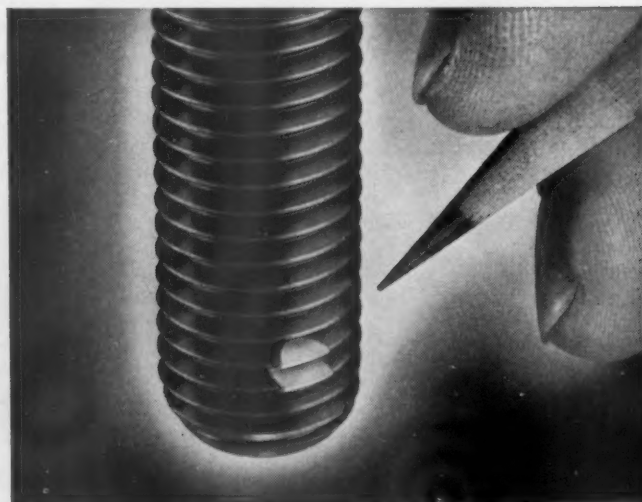


HOW NYLOK® LOCKS:

**LOCKED!** The tough, resilient nylon pellet keys itself into the mating threads. It forces threads together, and locks the screw securely.



**BEFORE ASSEMBLY.** The nylon pellet projects slightly beyond male threads. When assembled, female threads will be impressed into it. Pellet locks effectively whether the screw is seated or not.



**AFTER REMOVAL.** "Plastic memory" of pellet has expanded impressed threads to greater diameter than screw threads. Screw can be used repeatedly. In use, "memory" keeps threads tightly locked.

# self-locking UNBRAKO that won't work loose

**They simplify design and  
save production time**

UNBRAKO socket screws are now available embodying the Nylok\* self-locking principle. Nylok provides a truly practical new solution to the problem of making screws self-locking.

An UNBRAKO screw with Nylok is a single self-locking unit. No auxiliary locking devices are needed. Just thread the UNBRAKO into any tapped hole. *Seated or not*, it locks positively wherever wrenching stops. The tough, resilient nylon pellet forces mating threads together and holds tight. The screw will not shake loose.

You save production time when you build products with self-locking UNBRAKOS. And you get greater simplicity in design with less bulk and weight. The number of parts you must assemble to achieve full locking action is reduced to the absolute minimum. Lock-washers under screw heads are no longer necessary. Costly wiring of cross drilled heads is eliminated. So are cotter pins and complex multiple set screw installations.

Self-locking UNBRAKOS are completely reusable. They have uniform locking and installation torques—with no galling or seizing on mating threads. They successfully withstand temperatures from  $-70^{\circ}$  to  $250^{\circ}$ F. And, on properly seated screws, the pellet acts as a liquid seal.

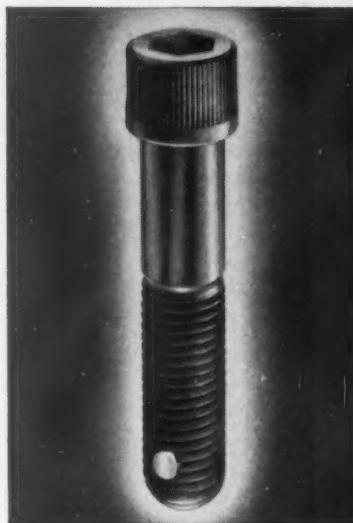
Self-locking UNBRAKO socket screws come in a complete range of standard sizes and materials. See your authorized industrial distributor. Technical data and specifications are detailed in Bulletin 2193. Write us for your copy today. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

*\*T.M. Reg. U.S. Pat. Off., The Nylok Corporation*

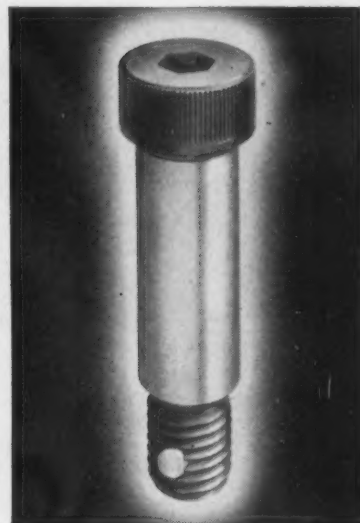
**UNBRAKO SOCKET SCREW DIVISION**

**STANDARD PRESSED STEEL CO.**

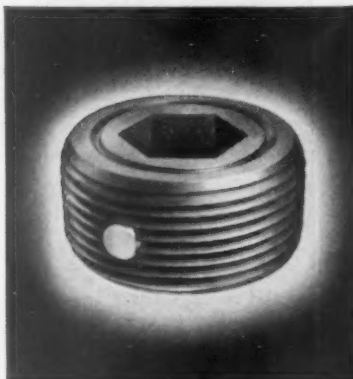
**SPS**  
JENKINTOWN PENNSYLVANIA



**Socket head cap screws.** Standard sizes # 6 to 1 in.



**Socket shoulder screws.** Standard sizes  $\frac{1}{4}$  to  $\frac{3}{4}$  in.



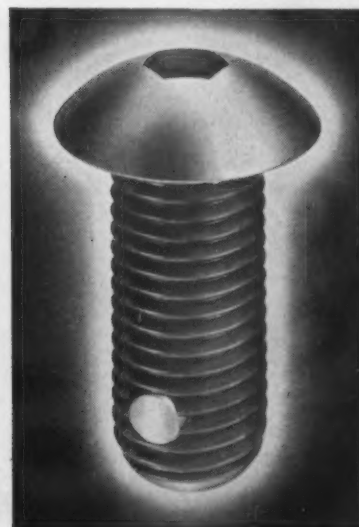
**Socket pressure plugs.** Standard sizes  $\frac{1}{8}$  to  $1\frac{1}{4}$  in.



**Socket set screws.** All standard point types. Standard sizes # 6 to 1 in.



**Flat head socket screws.** Standard sizes # 6 to  $\frac{3}{4}$  in.



**Button head socket screws.** Standard sizes # 6 to  $\frac{3}{8}$  in.



**Ask these questions, too, when you judge a fluorescent lamp ...**



**Is your investment protected?**

Check Westinghouse Fluorescent Lamps against any other brands you are now using. Check them for maintained brightness, long life, uniform appearance. If you are not entirely satisfied on all counts, your full purchase price will be refunded.



**Is it built for good "lumen maintenance"?**

Made exclusively with deterioration-resistant Halo Phosphors, Westinghouse fluorescent lamps maintain high light output to the end of their long lives.



**Is it the correct type, size and color for the lighting job to be done?**

In the Westinghouse fluorescent family of 290 different lamps—including Slimline and Rapid Start—there's a type and size precisely right for every office, plant and merchandising application. Colors include seven different shades of "white" alone.



For the full story on how to get more for your money in fluorescent light, contact your Westinghouse Lamp Representative.

**WATCH WESTINGHOUSE**

WHERE BIG THINGS

ARE HAPPENING FOR YOU!

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## association news

### NAPA Appointments

The national headquarters of the National Association of Purchasing Agents has announced the following appointments and assignments:

E. F. Andrews, Pitman-Moore Company, Indianapolis, Indiana, has been appointed to the Policy Committee of the National Committee on Education. As a former president of the N.A.P.A., Mr. Andrews has a wealth of knowledge which will be of great assistance in furthering the objectives of the National Committee on Education.

William T. Reynolds, Los Angeles Transit Lines, Los Angeles, California, has taken up duties on the Development Committee on Education in Schools and Colleges. The committee is concerned with promoting greater recognition of the purchasing function by professional educators, and is giving students a proper concept of the responsibilities and functions of the purchasing department.

Carl W. Failmezger, Socony Vacuum Oil Company, Milwaukee, Wisconsin, is the new District Chairman of District No. 3 of the National Committee on Public Relations.

Philip F. Whitaker, Melpar, Inc. Falls Church, Virginia, has been appointed District Chairman of District No. 5 of the National Committee on Public Relations.

The National Committee on Nonferrous Metals has two new members. K. R. Geist, Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin will report on titanium. J. K. Miller, Aluminum Company of America, Pittsburgh, Penna. will report on magnesium. Titanium and magnesium are included on the list of nonferrous metals by National Chairman Harold Berry because

he feels that they are metals of the future and their activities should be reported to the membership.

Kenneth A. Cruise, Bendix Aviation Corporation, Kansas City, Missouri has taken over the district chairmanship of District No. 3 of the National Committee on Standardization. It was left vacant by the retirement of Harold Wright, Automatic Electric Corp., Chicago, Ill.

E. Philip Kron, Eastman Kodak Company, Rochester, New York has been upped to District Chairman of District No. 8 of the National Committee on Standardization. With the split-up of District No. 8 into two separate districts, Mr. Kron has been made District Chairman of the northern section, which will still be known as District No. 8.

### Saginaw Valley

President . . . Cecil L. Phillips, Robert Gage Coal Co.

First Vice President . . . Roland E. Neal, Dow Corning Corporation

Second Vice President . . . Earl H. Longworth, Raymond Products Company

Secretary . . . Otto Post, Jennison Hardware Co.

Treasurer . . . Ray Austin, Magline, Inc.

National Director . . . Carl Vass, Leonard Refineries, Inc.

### Cleveland

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First Vice President . . . L. W. Curren, Van Dorn Iron Works

Second Vice President . . . Chester Jones, Diamond Alkali Co.

Secretary-Treasurer . . . Charles Conley, Standard Oil Co.

National Director . . . A. O. Anderson, Aluminum Company of America

Director . . . R. Bosch, Thompson Products, Inc.

Director . . . S. P. Brownell, Cleveland Electric Illuminating Company

Director . . . W. H. Conant, The Weldon Tool Company

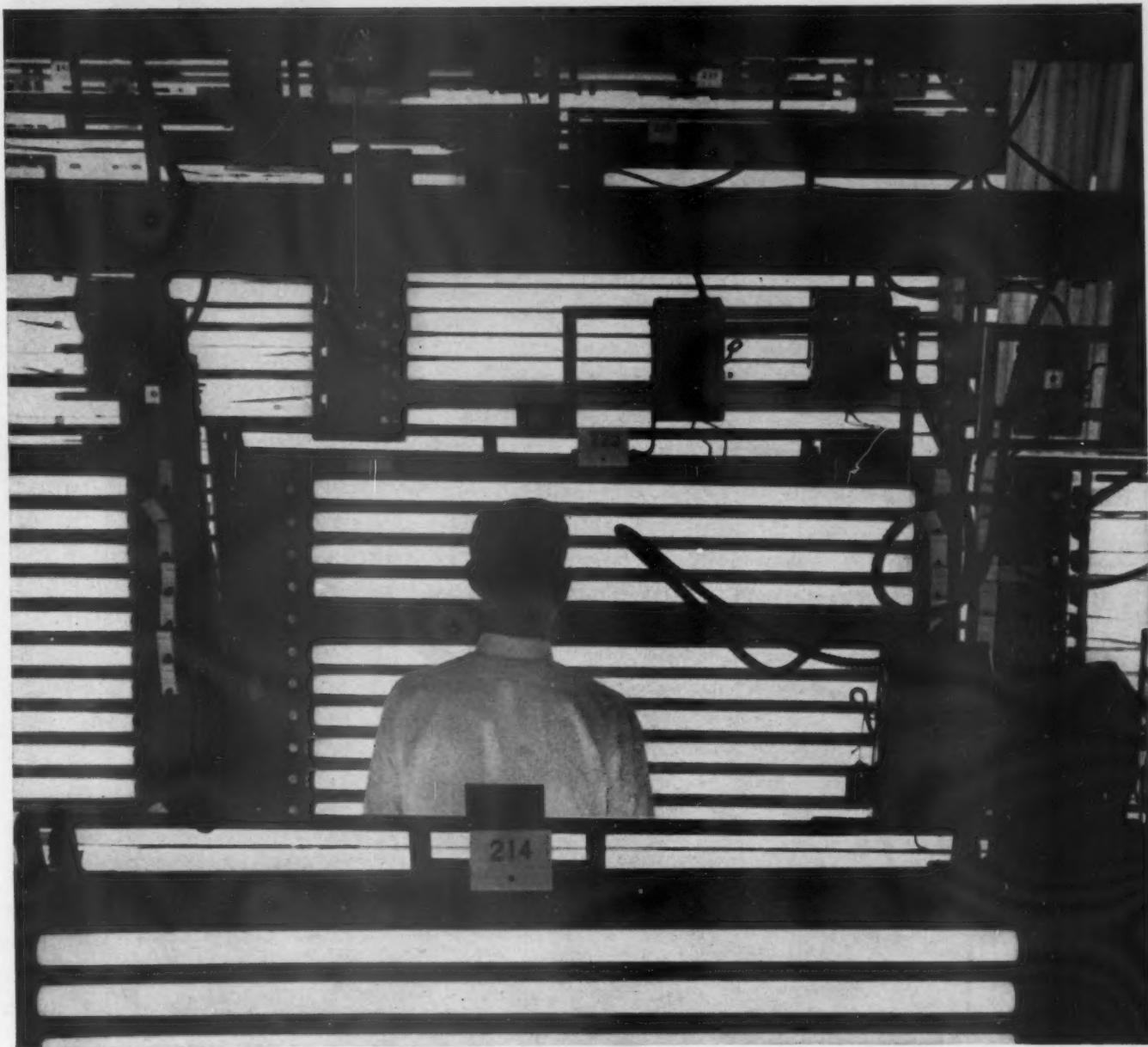
Director . . . W. H. Mansfield, Perfection Industries, Inc.



how to judge a fluorescent lamp

... point no.

7



ask about **QUALITY  
CONTROL**

You would never guess it from their price, but fluorescent lamps today are *precision* products. (In Westinghouse fluorescent lamps, for example, you'll find mercury measured with the precision of a doctor's prescription, electrodes wound with fine-watch accuracy.) Thus only the closest quality control can give you the high light output, the long life, the good color qualities you expect from every single lamp you buy. Westinghouse quality control includes *480 inspections and tests* for every lamp produced.

**WATCH WESTINGHOUSE**  
WHERE **BIG THINGS** ARE HAPPENING FOR YOU!

# LOOK TO **WILLSON**

for another new development in head protection!



## NOW—SUPER-TOUGH PHENOLIC SAFETY HATS AND CAPS

FROM THE WILLSON RESEARCH CENTER now comes the "Phenolic" line of scientifically designed safety headgear that meets all specifications with ease!

In this Super-Tough line are safety developments so outstanding that you'll find it offers unequalled value. For instance, the famed "geodetic suspension" and the unique pneumatic headband are obtainable in both adjustable *lace-in* and *snap-in* types of hats and caps.

Ask your Willson distributor to demonstrate the heavy duty Phenolic line that combines comfort and maximum head protection. Or write for latest "Super-Tough" bulletin describing them in detail.

### Strongest Made!

See how it's built up from 24 individual die cut pieces into a sturdy Phenolic pattern that withstands repeated 80-foot-pound drop ball tests without even fracturing!



#### LACE-IN SUSPENSION

Both hats and caps are available with convenient lace-in suspension feature. Easily adjusted for snug comfort to any head size.



#### SNAP-IN SUSPENSION

Handy Center-Tie snap-in type suspension is also obtainable in Super-Tough hats and caps. Willson's exclusive patented "Geodetic Suspension" and Pneumatic Headband can be had in any style!



Over 300 safety products carry this world-famous trademark

# WILLSON

PRODUCTS DIVISION  
RAY-O-VAC COMPANY

221 Washington Street, Reading, Pennsylvania

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## association news

### Dayton

President . . . Harold E. Nemecek, Lau Blower Co.  
First Vice President . . . Philip B. Hull, West Side Lumber Co.  
Second Vice President . . . Harold O. Rice, Production Control Unit  
Treasurer . . . R. Caywood, Horstman Printing Co.  
Secretary . . . Clarence L. Johnson, Globe Industries, Inc.  
National Director . . . T. R. Thompson, Aeroproducts-Allison Div. GMC  
Director . . . Joseph R. Geyer, Sheffield Corp.

### Indianapolis



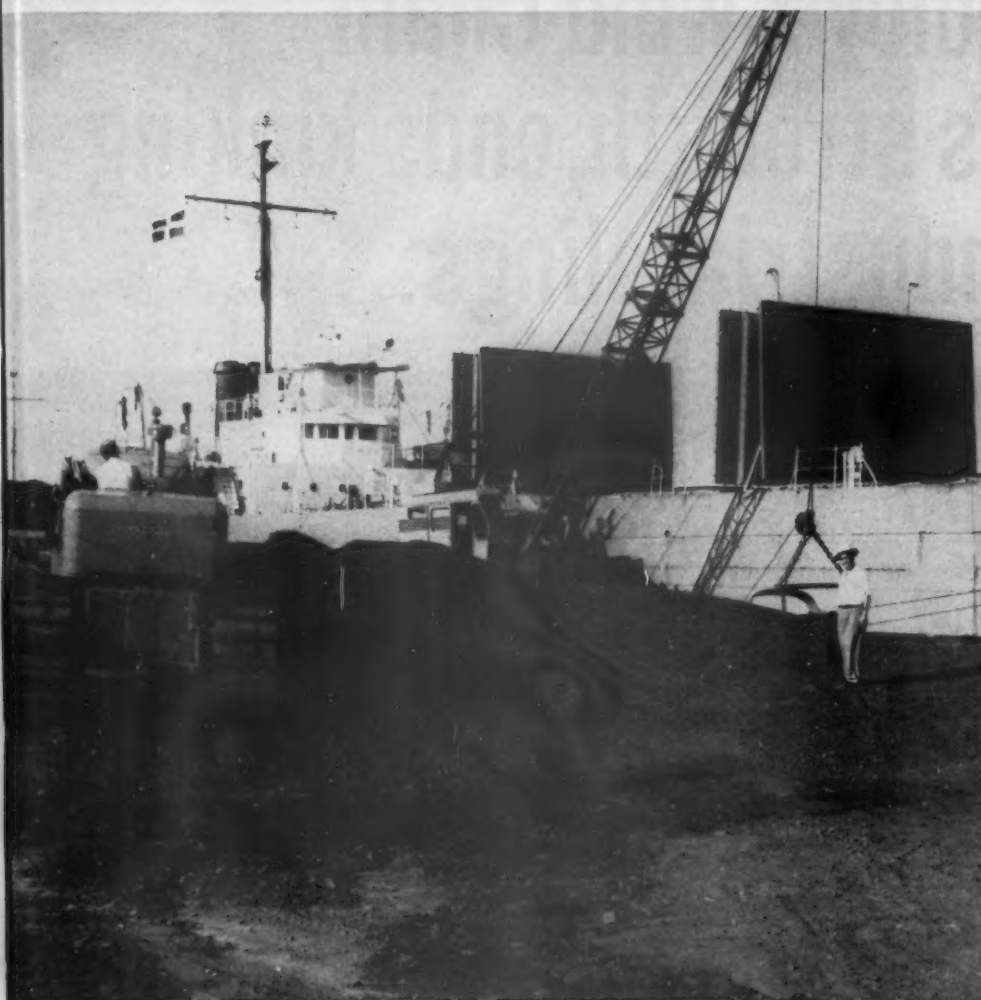
Harry McMullen

President . . . Harry McMullen, Farrell-Argast Electric Company  
First Vice President . . . H. W. Haugen, Holcomb & Hoke Manufacturing Company  
Second Vice President . . . Stanley C. Boyle, Republic Creosoting Company  
Secretary . . . C. R. Lenglade, Peerless Pump Division, Food Machinery & Chemical Corp.  
Treasurer . . . C. W. Wolfe, Insley Manufacturing Co.  
National Director . . . John F. Brennan, Hugh J. Baker & Co.

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PURCHASING

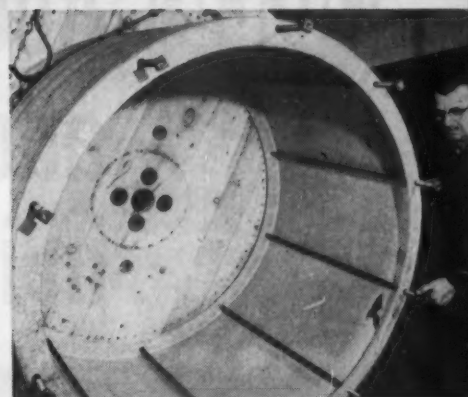
# BARIUM STEEL—active in America's growth



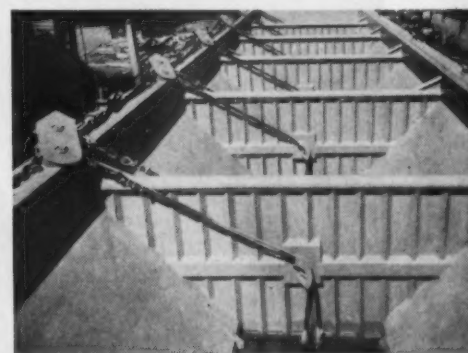
**STEEL.** Rich iron ore from mines in the Dominican Republic is being loaded onto Barium ore carriers here for import. Averaging between 65% and 69% iron, this high-grade ore will go to service Barium's steel-making facilities, as well as adding to the industry's supply of open hearth lump ore.



**AUTOMOBILES.** Some of the body parts for practically 4 out of every 5 American cars today come from Barium's Cuyahoga Spring Company. In addition to these oddly shaped rods and automotive parts Cuyahoga also specializes in springs and flat fasteners for household appliances. Perhaps this specialized experience could help you.



**ELECTRICAL INDUSTRIES** are long-time Barium customers. Made at Bayonne Bolt Corp., these  $\frac{3}{4}$ " by  $4\frac{1}{2}$ " long bolts are used by General Cable Corp. of Bayonne to assemble the large cable reels above. Washers on this job come from Phoenix Iron & Steel, another member of the Barium team. Whether you're looking for standard or special fasteners, you'll find them at Bayonne.



**DREDGING** and harbor transport experts are showing keen interest in this 170' hydraulically-controlled dump scow designed by Barium. Made by Barium's Wiley Manufacturing Co., this one goes to J. Rich Steers Sand and Gravel Corporation of New York, while three more are already on order. Maybe this new design could solve some of your dredging or harbor transport problems.



**AIRCRAFT** jet engine and guided missile manufacturers come to Industrial Forge and Steel for titanium billet forgings. This Barium subsidiary specializes in titanium and is one of the largest forgers of this new, light, strong, heat-resistant metal. If you're interested in a metal with these characteristics, why not check with Industrial.

## STEEL PRODUCERS

Phoenix Iron & Steel Co. (Plate Div.; Structural Div.; Steel Tube Div.; Blast Furnace Div.)

## STEEL FABRICATORS & PROCESSORS

Phoenix Bridge Company • Industrial Forge & Steel, Inc. • Globe Forge, Inc. • The Geometrix Stamping Company



This close-knit, alertly managed team of companies will be glad to put its engineering resources and production facilities at your disposal. See a complete product and service listing in Thomas' Register, Section A to Z, or write to:  
25 BROAD STREET, NEW YORK 4, N. Y.

## MANUFACTURERS OF END PRODUCTS

Clyde Iron Works, Inc. • Erie Bolt and Nut Company • Bayonne Bolt Corporation • The Cuyahoga Spring Company • Jacobs Aircraft Engine Company • Wiley Manufacturing Company

## LIGHTWEIGHT METAL AND PLASTICS

East Coast Aeronautics, Inc.





# Accoloy X-weld Chain adds strength, ends kinking in industrial slings...



Part of Marion Power Shovel frame  
being lifted by sling made with  
Accoloy X-weld 125 Chain

## Users are enthusiastic about Acco's great, versatile, new chain

Since its introduction last year, the sensational ACCOLOY X-WELD 125 CHAIN—"the chain that identifies itself"—has proved its unique superiority for uncounted industrial uses. Because of its exclusive features and unprecedented performance, users hail it as the greatest triumph in chain manufacture since the advent of electrically welded chain.

For example, made up into ACCO Registered Slings with our new Shaped Section Master Link, Accoloy X-weld 125 provides *unequalled strength at the welds*. The welded area of each link is  $2\frac{1}{4}$  times the area obtained by normal welding methods. This gives added stamina—and greater resistance at the weld to sharp-corner pressure damage.



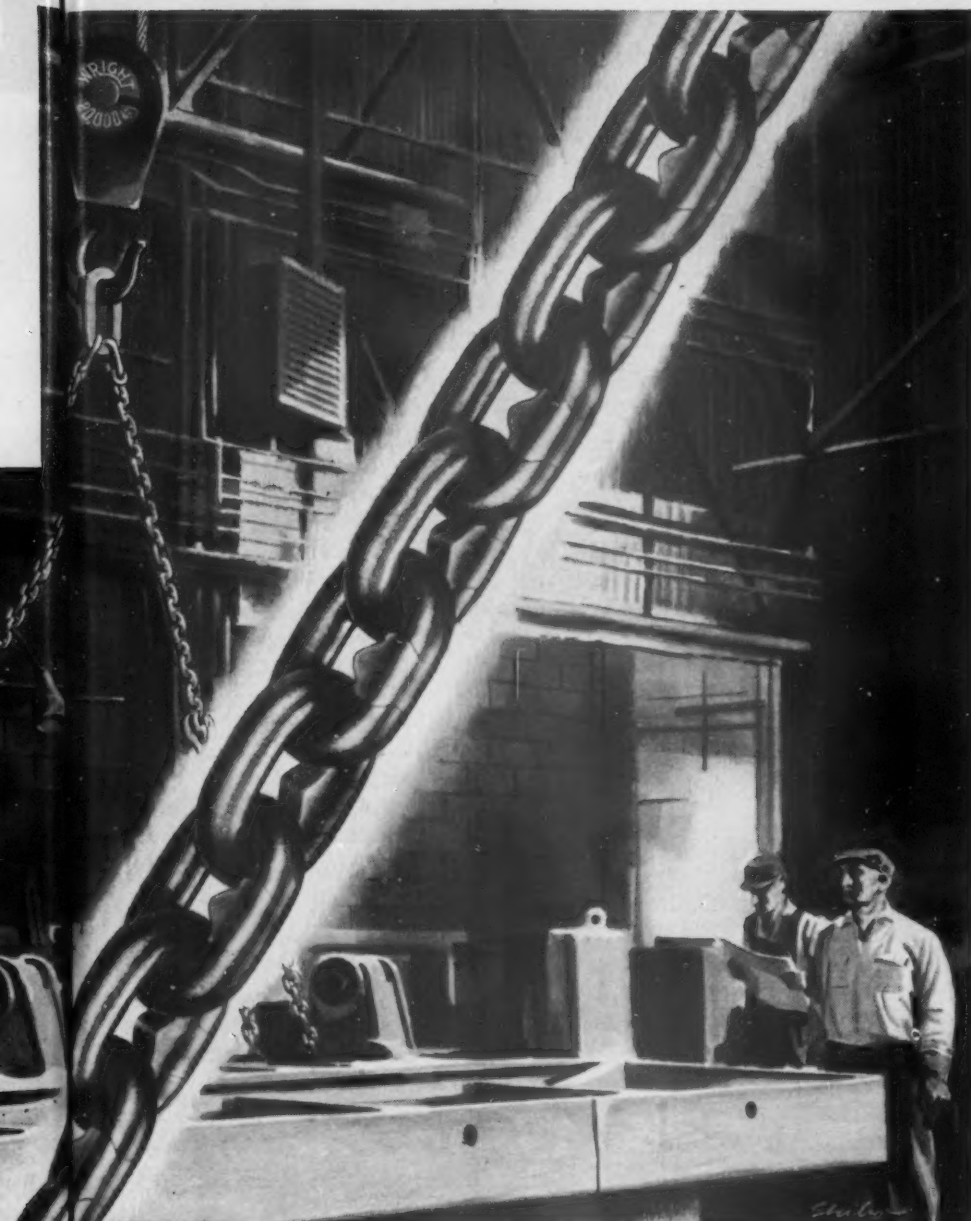
THE SECRET  
IS IN THE WELD

Accoloy X-weld 125 simply *won't* kink, thanks to the full alloy strength lugs which make kinking impossible. It hangs straight as a die. Chain users find this a great advantage.

### Versatility plus Economy

This spectacularly finer chain is available in five sizes ( $\frac{1}{4}$ " through  $\frac{3}{4}$ "—also in special analyses and heat treatments. It is ideal not only for industrial slings but for bundling, towing, and general utility chains—in fact, for whatever uses demand chain of highest strength, long life and dependability. There's real economy in using Accoloy X-weld 125 Chain, too. All this adds up to Better Value.

Write our  
York, Pa., office  
for  
Folder DH319  
on  
Accoloy X-weld 125  
Chain

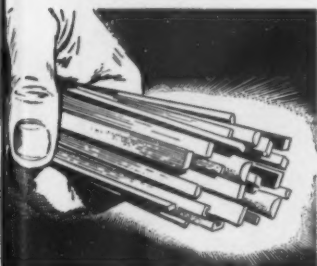


For information on any ACCO product, address Market Development Department, American Chain & Cable Company, Inc., 929 Connecticut Avenue, Bridgeport, Connecticut

## ACCO American Chain & Cable Company, Inc.

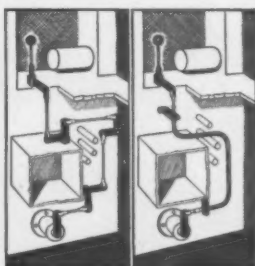


SALES OFFICES IN: Atlanta, Bridgeport, Conn., Boston, Chicago, Denver, Detroit, Exeter, Pa., Houston, Los Angeles, Monessen, Pa., New York, Philadelphia, Pittsburgh, Portland, Ore., Reading, Pa., San Francisco, Wichita, Kans., Wilkes-Barre, Pa., York, Pa.



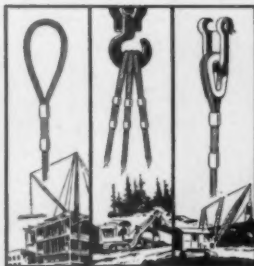
### PAGE SHAPED WIRE

Shaped to your own cross section—flat, round or special contour; in high or low carbon steel, stainless, Armco, or special alloy.



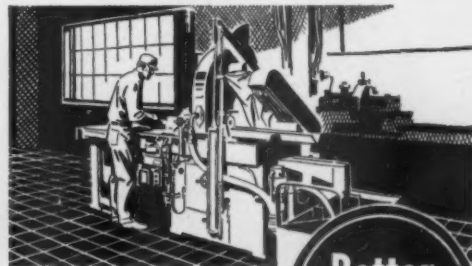
### TRU-LAY PUSH-PULLS

They simplify design and improve construction by eliminating links and levers. Solid as a rod, yet flexible as wire rope.



### WIRE ROPE ASSEMBLIES

Used as boom cables, logging chokers, registered slings, etc. Assemblies have safe DUALOC endings which develop full rope strength.



### CAMPBELL ABRASIVE CUTTERS

Quality machines for dry, wet or submerged abrasive cut-off. Machine capacities to 8" solid squares.

**Better Values**

## ACCO BETTER VALUES — KEY TO BETTER BUSINESS

You get better values when you buy ACCO products. Hence, your company can give better values when selling to your customers!

### AMERICAN CHAIN DIVISION

Weed Tire Chains • Welded and Weldless Chain  
Acco Registered Sling Chains

### AMERICAN CABLE DIVISION

Tru-Lay Preformed Wire Rope  
Acco Registered Wire Rope Slings • Tru-Loc Assemblies

### AUTOMOTIVE and AIRCRAFT DIVISION

Aircraft Cable, Controls, Fittings  
Tru-Stop Brakes for trucks and buses

### ACCO CASTING DIVISION

Electric Steel and Malleable Iron Castings

### ALLISON DIVISION

Rubber and Resinoid Bonded Abrasive Wheels

### CAMPBELL MACHINE DIVISION

Wet Abrasive Cutting Machines • Nibbling Machines

### FORD CHAIN BLOCK DIVISION

Chain Blocks • Electric Hoists, Trolleys

### HAZARD WIRE ROPE DIVISION

Lay-Set Preformed Wire Rope  
Acco Registered Wire Rope Slings • Tru-Loc Assemblies

### HELICOID GAGE DIVISION

Pressure, Vacuum or Compound Gages

### MANLEY DIVISION

Automotive Equipment for garages and service stations

### OWEN SILENT SPRING DIVISION

Owen Springs and Units for mattresses and furniture

### PAGE STEEL and WIRE DIVISION

Welding Wire, Shaped Wire, Manufacturers' Wire,  
Chain Link Fence

### PENNSYLVANIA LAWN MOWER DIV.

Power and Hand Lawn Mowers

### R-P & C VALVE DIVISION

Bronze, Iron & Cast Steel Valves • Steel Fittings

### WILSON MECHANICAL INSTRUMENT DIVISION

"Rockwell" Hardness Testers

### WRIGHT HOIST DIVISION

Wright Chain Hoists, Electric Hoists, Cranes

### THE BRISTOL COMPANY

Automatic Control, Recording and Telemetering  
Instruments, Aircraft Controls, Socket Screws

### THE MARYLAND BOLT and NUT CO.

Bolts and Nuts • Lag Screws and Forgings

IN CANADA: DOMINION CHAIN COMPANY, LIMITED

THE BRISTOL COMPANY OF CANADA LIMITED

IN ENGLAND: BRITISH WIRE PRODUCTS, LIMITED

THE PARSONS CHAIN COMPANY, LIMITED

## METAL & THERMIT

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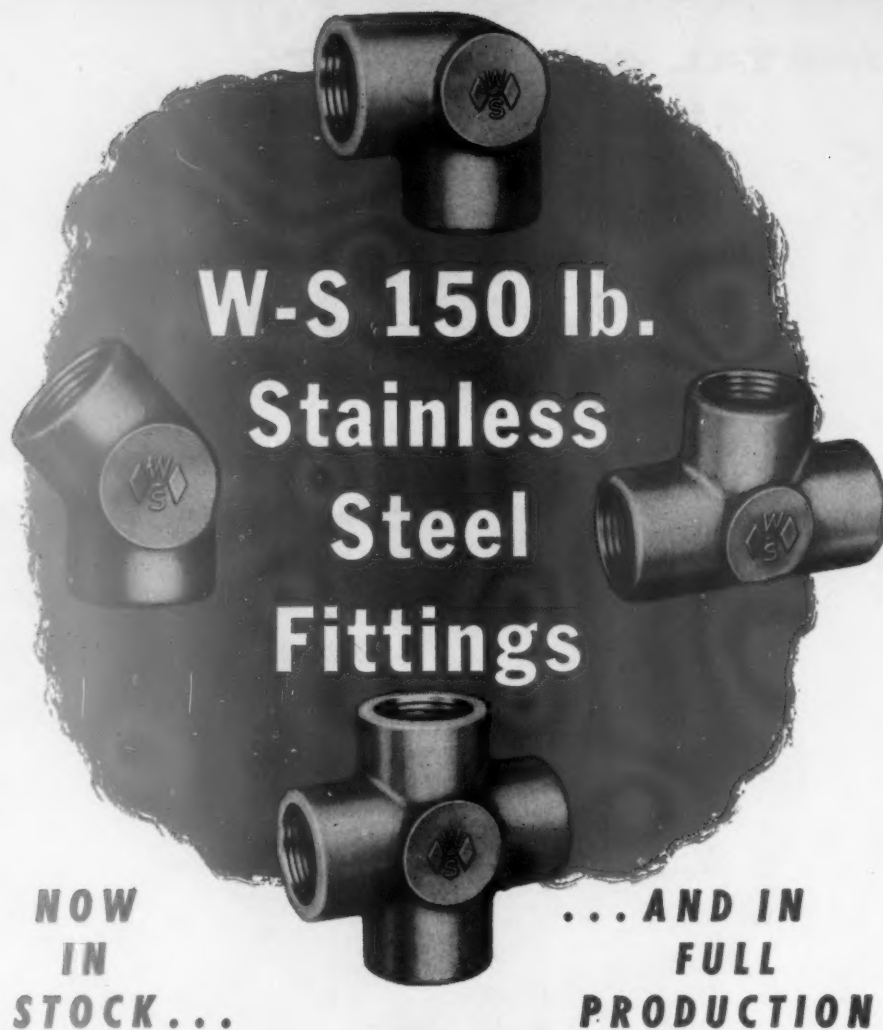
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For More Information Circle No. 287 on Inquiry Card—Page 17



**W-S 150 lb.  
Stainless  
Steel  
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**... AND IN  
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New production machinery and techniques developed at W-S Fittings Division now assure you of prompt deliveries on corrosion resistant stainless steel pipe fittings. Your local W-S stainless steel distributor will be glad to fill your order from his stock.

W-S 150 lb stainless steel fittings, types 304 and 316, resist a wide variety of corrosive services in petroleum, chemical, petrochemical, food and other process industries. They are also ideal for many low temperature operations because of their inherent toughness at sub-zero conditions. W-S 150 lb fittings can be obtained in sizes  $\frac{1}{2}$ " to 4" in either screw-end or socket-welding types to meet your needs.

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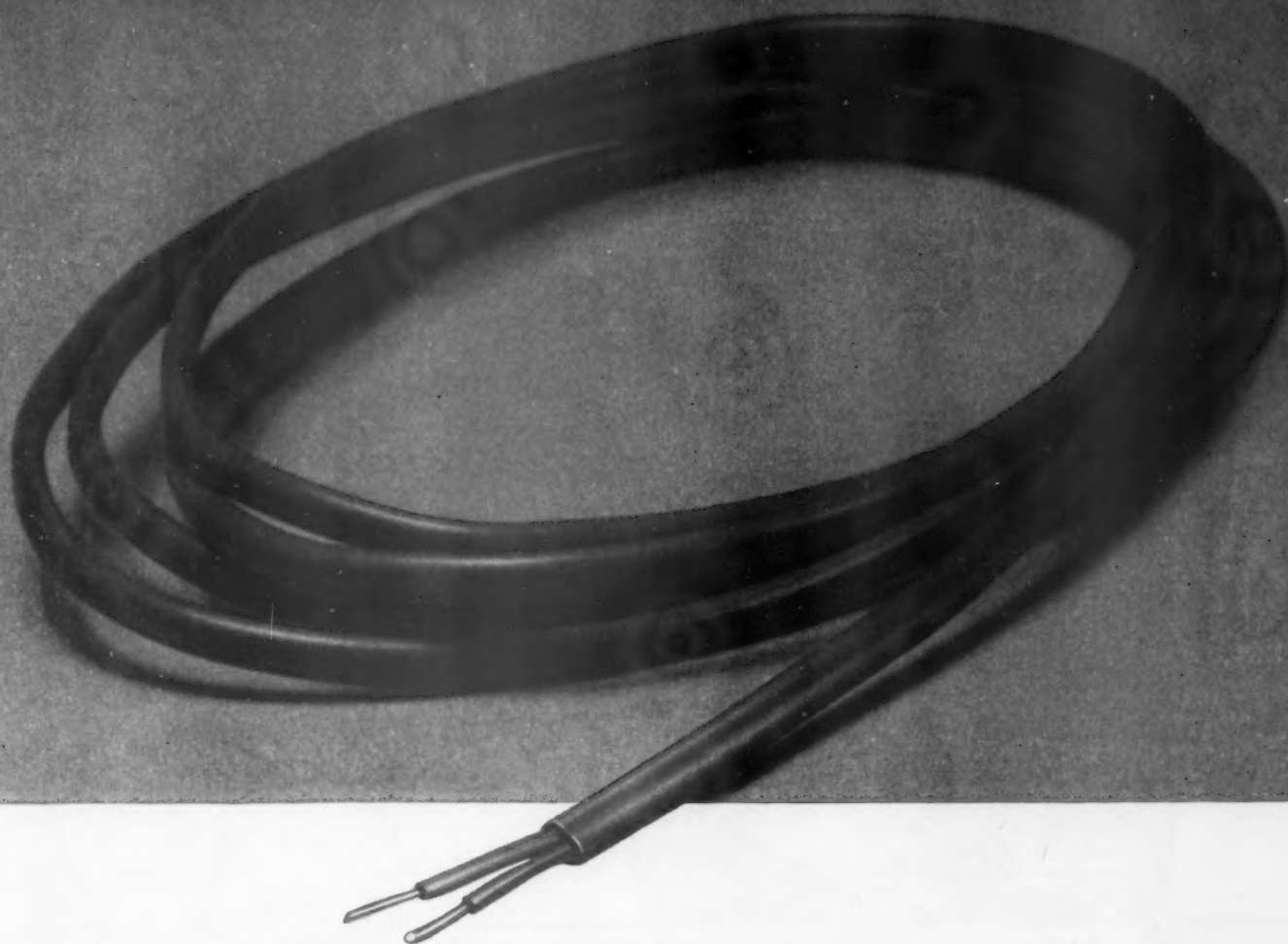
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**PURCHASING**



## New thermocouple extension wire flame-proof, weather-proof

... available through your



**H**ERE'S a thermocouple extension wire with superior insulation. Each of the two solid conductors is insulated with .015" polyvinyl, and the pair is further protected by an outer .02" polyvinyl jacket. It's the ideal wire for even the toughest service. What makes it better than ever is a *new kind* of polyvinyl insulation that gives these qualities:

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**Won't support flame.** Fire merely chars the coating. You can rewire without replacing the conduit.

**Abrasion-resistant.** Jacket won't break or fray in roughest service.

**Easy to pull through conduit** because jacket is smooth.

**Weather-proof** ... double vinyl insulation gives extra protection.

**Moisture-resistant.** *Completely* moisture-resistant.

**Flexible.** Can be flexed safely ... will not crack or split.

Ask your local HSM (Honeywell Supplies Man) to tell you about this new wire ... and to discuss how the HSM Plan can bring new convenience and economy to all your pyrometer supplies purchases. Call him today, at your local Honeywell office ... as near as your phone.

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- **REFERENCE DATA:**  
Write for Specification S002-1,  
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Rough and tumble delivery jobs are the natural element for FROSTKRAFT bags and boxes.

Every FROSTKRAFT packaging product is sent out into the world to be just as tough as the situation requires. Starting with the strong, hard fibers of Southern Pine grown in Olin Mathieson forests — through processing and converting in Olin Mathieson plants — FROSTKRAFT packaging is held to perfection-only standards of quality control.

If you've got a mean kraft packaging problem, tough-tempered FROSTKRAFT will whip it down to size. Your FROSTKRAFT representative has the experience to help you... right now... why not call him?

**Rough Deliveries  
Made Easy  
with  
tough-tempered  
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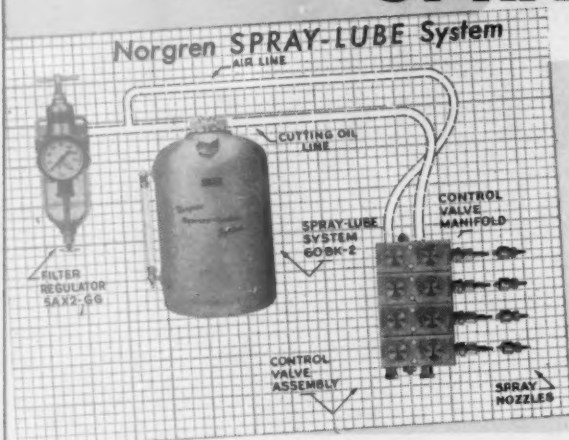
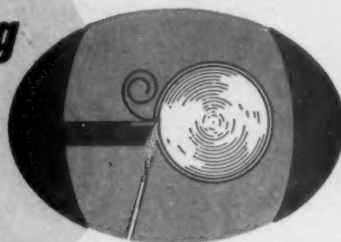
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# Faster Metal Cutting at LOWER COST

with improved

*Norgren*

# SPRAY-LUBE



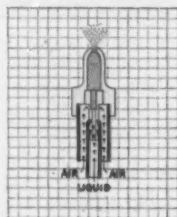
for  
Tapping Machines  
Drill Presses  
Milling Machines  
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Die Lubrication  
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**Better Lubrication**—A better, more uniform spray of cutting oil is applied directly upon the close interface between the tool and work piece. It can be directed from the underside of the curled chip or from any other angle that will best reach the critical lubrication points. Tool wear is less—saves tool costs, cuts down-time.

**Faster Cooling**—Because of the larger fluid surface area of the spray and the expansion of the compressed air, heat is dissipated quicker. Cutting can be faster—production stepped up.

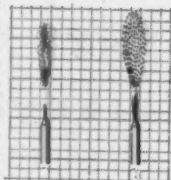
## Uniform Spray

Air and cutting oil, with flow of each accurately controlled, are conveyed to the nozzle by means of a tube within a tube connection. The oil spray produced by the discharge nozzle is consistently uniform in quality. The spray is delivered to the cutting area the instant the machine is turned on. There is no sputtering or intermittent flow.



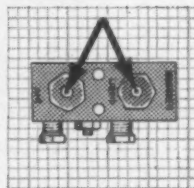
## Accurate Control of Spray

By adjusting the pressure and the individual outlet controls for air and coolant, spray can be applied in exactly the right quality and quantity for any metal cutting or metal forming job.



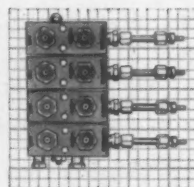
## Tamper-Proof Controls

Allen-head screws are used on the control valves for adjusting flow of both air and liquid and are recessed into valve to prevent tampering with flow.



## Valves Compactly Manifolded

For multi-point application of SPRAY-LUBE, the control valves are designed so that they can be closely assembled in a manifold arrangement.



## Compact, Convenient Size

A space only 14"x20"x7" is required for a 2-gallon unit—4 to 12 fluid ounces of liquid an hour per nozzle are sufficient for most operations.



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Without obligation, learn how Improved Norgren SPRAY-LUBE can reduce costs in your plant. Call your nearby Norgren Representative listed in your telephone directory—or WRITE THE FACTORY FOR BULLETIN 537.

*Pioneer and Leader in Oil-Fog Lubrication Since 1930*

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PAGE 17





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The use of Gerrard Round Steel Strapping has enabled Caterpillar Tractor Co. to turn out tighter, safer pallets and cartons of materials in far less time than was previously required. Caterpillar uses Gerrard Round Strapping for all types of reinforcing applications, from cartons of small parts to huge pallets of engine blocks.

Available in a wide range of sizes,

USS Gerrard Strapping, Round or Flat, is virtually tailored to every tying application, regardless of the shape or size of the pallet or crate.

Initially, the cost of Gerrard Round Steel Strapping is low—about 40% less than any other form of metal reinforcement. Moreover, it cuts materials handling time to fractions, and produces firmer, safer-to-handle, easier-to-stack packages.

Gerrard Strapping is quick and easy to use, and once bundles are strapped, they need no further inventorying. Pilferage is eliminated and damage is reduced to a minimum.

If you have a packaging-tying problem, why not give our engineers a crack at it? They could come up with just the right solution to benefit you and your customers.

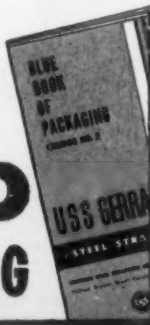
### NEW CATALOG—HOT OFF THE PRESS!

36 pages of photographs, description, facts and figures on all USS GERRARD Steel Strapping and associated equipment.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION  
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*Round and Flat* **STEEL STRAPPING**

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# A-C Welders

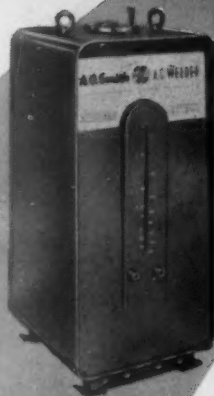
**LOW-COST SHOP WELDER**  
(Model 20-S) 200 ampere A-C welder designed specifically for maintenance and repair of equipment or for light parts fabrication. Meets all NEMA specifications.



**FOR FARMS, GARAGES AND SMALL BUSINESSES** — (Model U-18) 180 ampere, combination A-C welder and full 12 volt battery charger. Dual welding ranges for light or heavy gauges.

D-C W  
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duction  
volts —  
range  
rated.

**FOR TOP PRODUCTION AT LOW COST** — (Model 300E) 300 ampere A-C production welder. Handles virtually all electrode diameters. All weather case.



**VERSATILE, PRODUCTION WELDER** — (Model 200E) 200 ampere A-C light production welder. Full 75 open circuit volts — 60% duty cycle. Welding range from 30 to 350 amperes. Has all deluxe features.



# "Power

## End the

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Wide selection in both A-C and D-C welding machine lines helps you get the *right* machine for present work . . . sensible margin to handle future jobs. You pay only for the power you need.

**Y**OU'LL find an A. O. Smith machine in virtually *every* amperage range . . . from 25 to 2500 amperes and in your choice of currents . . . A-C, D-C or Constant Potential. There are models available for manual, semi-automatic or completely automatic operation; for indoor or outdoor installations, and for light to extremely heavy-duty cycles.

In addition: (1) Every machine in the A. O. Smith line is insulated with silicone for greatest ability to withstand overloads and for increased resistance to corrosive or moist atmospheres. (2) All constant current machines have moving coil design for maximum safety, better welding characteristics, improved ventilation and longer life. (3) All have precision wound coils . . . stepless, easy-turning current control . . . high velocity ventilation and many other features designed to guarantee maximum performance and longer life.

Before you buy any welding machine, investigate this line in detail. You'll see why you buy better when you buy A. O. Smith job-matched power.

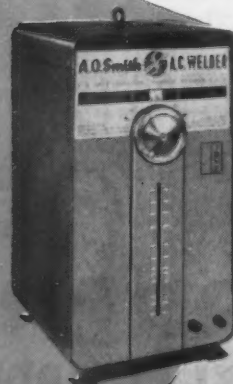


**FOR EVERY JOB IN YOUR PLANT** — (Model 400E) 400 ampere A-C production welder with the widest ampere range in industry — from 75 to 585 amperes.



**FOR THE FINEST IN PRODUCTION WELDING** — (Model 400) 400 ampere A-C production welder. Handles sustained heavy loads without fear of machine damage. Production proved on industry's toughest jobs.

**UNEQUALLED FOR QUALITY FEATURES** — (Model 500) 500 ampere A-C production welder. Has all the deluxe features necessary for smooth, efficient operation and offers many extra years of machine life.



**MANUAL OR AUTOMATIC WELDING** (Model 650E) 650 ampere A-C welder. Singly or in series — specifically designed for the shop that cannot afford inflexible automatic equipment.



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**D-C WELDING AT LOWEST COST**  
(Model 2000) 200 ampere D-C production welder. 80 open circuit volts — 60% duty cycle. Welding range 25 to 345 amperes. NEMA rated.



**INDUSTRY'S MOST VERSATILE D-C WELDER** — (Model 3000) 300 ampere D-C rectifier. Has four different arc characteristics at the flip of a switch. Positive thermal overload protection.



**FOR YOUR TOUGHER D-C JOBS** (Model 4000) 400 ampere D-C rectifier with exclusive downdraft ventilation. Smooth arc — forcing arc and arc booster selection are but a few of its features.

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**MANUAL OR AUTOMATIC D-C WELDING** — (Model 6000) 600 ampere D-C rectifier. A versatile, all-purpose D-C power source. Particularly suitable for use with C-OMATIC or C-OMANUAL.



**FOR INERT GAS AND SUBMERGED ARC** — (Model 600CP). Full 600 ampere constant potential welder. Zero to 45.4 voltage range. Built-in 110 volt power supply — superior voltage regulation.

# Guessing Game"

of job-matched welders



**FOR WELDING . . . FOR POWER** (Model 10,000) 1000 ampere D-C rectifier power unit designed to replace motor generator equipment. Use as a high-ampere D-C welder or as a compact power source.

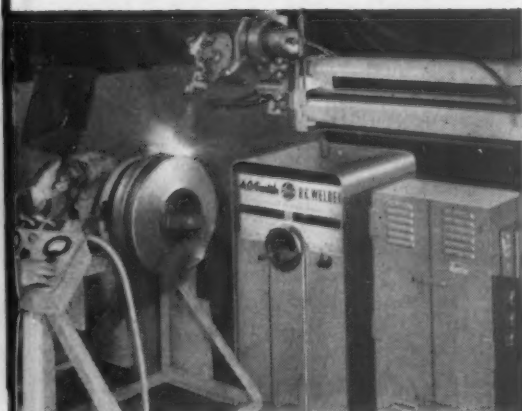


**COMPACT CONSTANT POTENTIAL POWER** — (Model 1500CP) 1500 ampere C.P. welder for multiple operator use (10 to 16 welders). Designed to augment or replace existing motor generators.

**1250 AMPERE D-C POWER** — (Complete information available on request).



**2500 AMPERE D-C POWER** — (Complete information available on request).



**C-OMATIC** — for automatic welding saving thousands of dollars annually over Helium or Argon. Easy to set up, easy to use. Includes control console, remote control stand, automatic head and A. O. Smith 600-amp D-C power.

## Plus C-OMATIC and C-OMANUAL...

not only the first and finest in carbon dioxide processes, but the fastest, most economical of all gas-shielded arc processes.

**C-OMANUAL** — new carbon dioxide, hand gun process puts manual welding on a virtual mass production basis. Includes lightweight hand gun which automatically compensates for arc length, portable control console and special A. O. Smith D-C rectifier.



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Your metal products get  
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**OAKITE**  
**CrysCoat**<sup>®</sup>  
pre-paint process

- zinc phosphate coatings in tanks\*
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From toys to tractors, whatever your metal product, there's an Oakite CrysCoat process that insures excellent paint adhesion, resistance to rust, and a fresh, lustrous appearance that lasts and lasts.

Oakite CrysCoat puts a dense, smooth phosphate skin on your metal product that lets paint travel farther in a thin, glossy coat ... and your product looks better, lasts longer — yet costs less. In addition, Oakite CrysCoat inhibits rust before painting, prevents it after painting. If the paint coat is scratched under rough treatment, rust is confined to the bared metal.

Oakite CrysCoat is easy to prepare and easy to control ... and is backed by Oakite Service and the famous Oakite guarantee.

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association  
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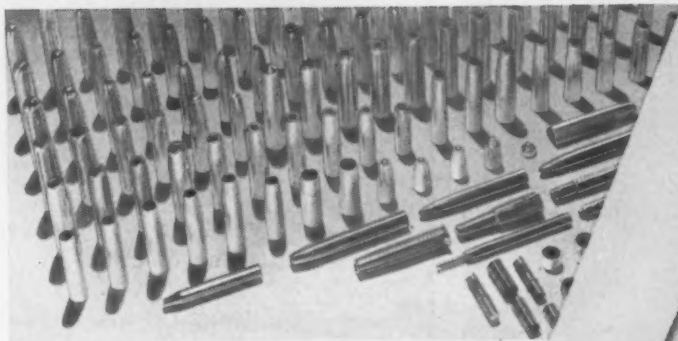
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Day, Jr., Moore-Handley Hard-  
ware Co.  
Treasurer . . . Clinton E. Wiberg,  
City of Birmingham  
Secretary . . . James B. Harring-  
ton, Birmingham Paper Co.  
National Director . . . Arthur M.  
Trogner, Jr., Line Material  
Company  
Director . . . Oscar M. Stagg, Jr.,  
Birmingham-Southern Railroad  
Director . . . William A. Fairburn,  
McCullough Industries  
Director . . . Carl F. Thomas,  
Owen-Richards Company  
Director . . . George H. Cole, Ala-  
bama Power Company  
Director . . . Argus Herron, J. W.  
Clary Company  
Director . . . M. Dan Behnke,  
Coosa River Newsprint Co.  
Director . . . George L. Wilson,  
Jefferson County Commission

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T. Henry  
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Broker  
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Hokanson

**FOR MORE INFORMATION  
ON PRODUCTS IN  
THIS ISSUE  
USE INQUIRY CARD—PAGE 17**

# Deep Drawn Metal Parts



- SHELLS
- CANS
- CUPS
- FERRULES
- SPECIAL DRAWN SHAPES

Parker "Jotter"\* ink cartridge  
fully drawn on one machine  
for maximum economy

● Secret behind the greater writing capacity of the Parker Pen Company "Jotter" ball point is this unique, king-size ink cartridge measuring  $3\frac{3}{16}$ " in depth.

Most part makers would have to produce this cartridge in stages, accomplishing a partial draw on one machine and completing it on another. Extra annealing and superfluous material handling introduce greater costs.

Sylvania has, at its Connecticut plant, multiple-plunger equipment to produce this complete draw in one continuous operation, on one machine, *at a saving to the customer.*

Sylvania's Parts Division offers you facilities for all eyelet and special formed parts—backed by 23 years' experience in helping manufacturers reduce their parts costs.

High-speed, multiple-plunger eyelet machines range in capacity from the smallest eyelet to a 3-ounce can drawn from a 5" blank. Parts may be drawn in all materials ranging in thickness from 0.007" to 0.055". The Metal Stamping section of Sylvania's 4-way parts service is also equipped with four-slides, vertical presses, and special Sylvania-designed equipment to meet all your requirements for small to medium size precision stampings, and wire and ribbon forms. Write for complete information.

\*Registered Trade-Mark of the Parker Pen Company

PARTS  
DIVISION



metal  
stamping



special  
wire



molded  
plastic



electronic  
parts



## SYLVANIA®

SYLVANIA ELECTRIC PRODUCTS, INC.  
Parts Division,  
Warren, Pennsylvania

LIGHTING • RADIO • TELEVISION • ELECTRONICS • ATOMIC ENERGY

AUGUST, 1956

For More Information Circle No. 296 on Inquiry Card—Page 17

225



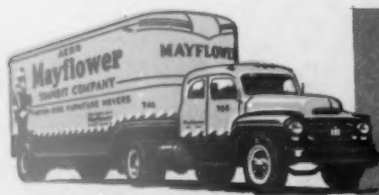
## Old Settlers for New Homes

**WHEN YOU MOVE LONG-DISTANCE THE MAYFLOWER WAY**

► By "old" we mean experienced. And by "settlers" we mean helpful, willing, competent moving men who are anxious to help the families you move get comfortably settled in their new homes. They assemble all lamps, beds, and other pieces which have been dismantled for moving. They arrange all the furniture as directed. They'll do the unpacking if that service is part of the order. In short, they'll do everything possible to make the new home immediately livable. This saves time, trouble, and money for the people you move, your company, and yourself. Let Mayflower do it for you.

**AERO MAYFLOWER TRANSIT COMPANY, INC. • INDIANAPOLIS**

Mayflower Service is available through selected warehouse agents throughout the United States and Canada. Your local Mayflower agent is listed under Moving in the classified section of your telephone directory.



**AERO  
Mayflower**  
NATION-WIDE  
FURNITURE MOVERS

**America's Finest Long-Distance Moving Service**

For More Information Circle No. 297 on Inquiry Card—Page 17

## association news

### Oregon

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J. E. Haseltine & Co.

First Vice President . . . Curtis E.  
Anderson, Northwest Industrial  
Laundry Company

Second Vice President . . . James  
L. Kelly, Freightliner Corpora-  
tion

Secretary . . . Kenneth A. Schmitz,  
E. J. Bartells Co.

Treasurer . . . Robert W. Stewart,  
Aluminum Company of Amer-  
ica

National Director . . . Russell  
Wetherell, M&M Woodworking  
Company

Director . . . James W. Beeson,  
Gilmore Steel & Supply Com-  
pany

Director . . . Harold E. Bloyd,  
Roberts Motor Company

Director . . . R. B. Tobey, Crown  
Zellerbach Corp.

### Dallas

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Procter & Gamble Mfg. Com-  
pany

First Vice President . . . Robert C.  
Kelley, Dresser Industries, Inc.

Second Vice President . . . Mack  
Wade, Mosher Steel Co.

Secretary-Treasurer . . . Fred  
Bradley, Southern Union Gas  
Co.

National Director . . . George C.  
Eason, Delhi-Taylor Oil Corp-  
oration

### North Central Ohio

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pliance Div., Westinghouse  
Electric Corp.

Vice President . . . C. W. Ober-  
rath, Jr.

Secretary . . . C. D. Barnes, Eaton  
Mfg. Company

Treasurer . . . W. E. Renwick,  
Mansfield Brass & Aluminum

Director . . . F. R. Tobin, Swan  
Rubber Company

**PURCHASING**



# WELDERS and PURCHASING AGENTS ARE GRABBING HOLD

of

## the new U. S. ROYAL Gold Fluted Welding Cable

### HERE'S WHAT WELDERS SAY:

"Easier to handle. It's so light and flexible I don't get the usual 'drag.' A cinch to handle in cramped quarters."

"I get easier grip. The *fluted* jacket does it. U. S. Royal Gold coils easily, resists kinks and tangles."

"Easier to see because of the bright yellow color. I don't trip over it. And I can easily tell it from the black cable whenever I have to use *two* cables on the machine."

\*The *fluted* jacket has a greater surface area. That makes the cable cooler to handle, because heat is dissipated quicker."

### HERE'S WHAT PURCHASING AGENTS SAY:

"Longer service life. U. S. Royal Gold is so flexible we get fewer terminal connection failures. Maintenance costs go down, replacements are few and far between."

"Superior impact resistance. Tests show that U. S. Royal Gold Fluted Welding Cable possesses greater resistance to impact. It shows up on my cost sheets."

"Lower accident insurance charges. U. S. Royal's bright yellow color catches everyone's eye. It also keeps workmen from running vehicles over it or dropping equipment on it. Result: U. S. Royal Gold lasts even longer."

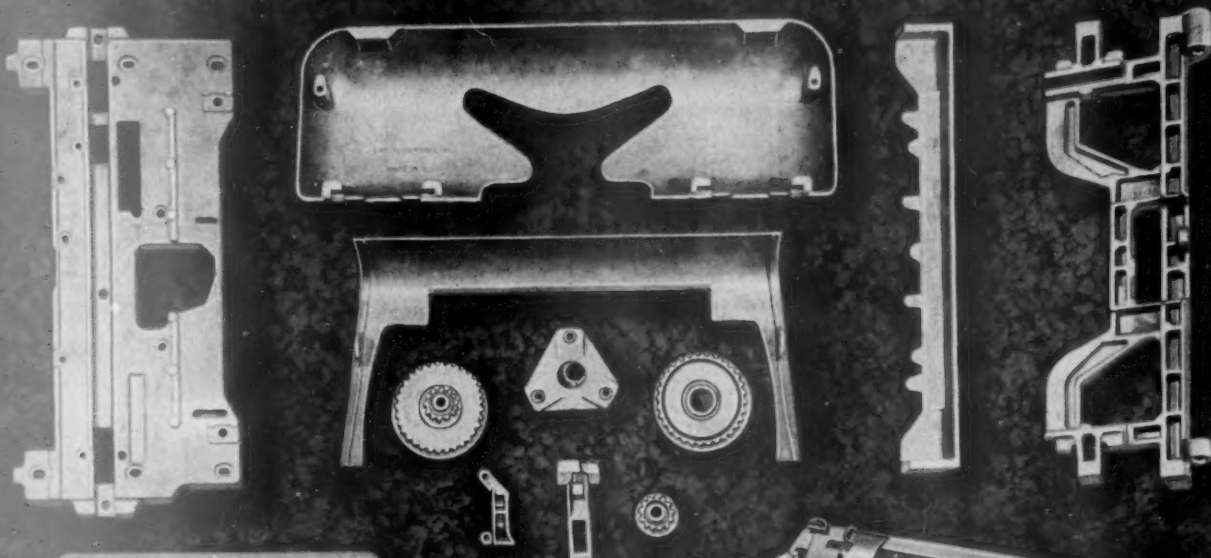
"It has high resistance to moisture—60% natural rubber jacket and 60% natural rubber insulation."

Get U. S. Royal Gold at electrical supply houses or write to us at Rockefeller Center, New York 20, N. Y.



Electrical Wire & Cable Department

## United States Rubber



CASE HISTORIES FROM  
MT. VERNON FILES

## NOW!... 11 Die Cast Parts in Smith-Corona's New Electric!



Smith-Corona calls their newest Electric Typewriter "the fastest in the world." Other features they list as exclusive are "a cushioning action that eliminates all jar at the end of each keystroke"; "complete keyboard control, and a revolutionary new keyboard slope." Their aim is to make this machine the easiest to use of all electric typewriters.

Also interesting to note is Smith-Corona's increasing reliance on die casting. With the urgent need in the electric machine for intricate parts of great strength, rigidity, and high precision . . . the model shown here has no less than 11 die cast parts! These include top plate, keyboard guard, pulleys, pinion gear, and type bar segment mounting — all highly complex castings.

The more complex and manifold your production problems, the more natural — and profitable — it is to call upon Mt. Vernon. For as manufacturers in many fields have discovered, Mt. Vernon has the most complete die casting service — comprising coordinated designing, die-making, casting, and machining, all under one roof. We give you to the highest degree all the

advantages of die casting: thin wall sections of great strength and rigidity, and parts produced to such close tolerances that often no machining is necessary. We have 162,000 square feet of the most modern equipment for making dies and for die casting aluminum and zinc.

It will pay you to bring your product specifications to us. We may show you, as we showed Smith-Corona, the way to important cost reductions and improved products.



**MT. VERNON**  
DIE CASTING CORP.  
STAMFORD, CONNECTICUT

### SALES REPRESENTATIVES

Mr. Grant Eller  
6 East 194th St., Cleveland, Ohio

Mr. Jerome J. Theobald  
9 East Genesee St., Skaneateles, N. Y.  
Mr. Arthur Diamond, Tools Incorporated  
86 Bethlehem Pike, Philadelphia, Pa.

Mr. Anker Anderson  
Cascade Road, Stamford, Connecticut  
Mr. William Savers  
101 Briarcliff Road, Rochester, N. Y.

Mr. David King  
230 Grant Boulevard, Syracuse, N. Y.  
Mr. George E. Hahl  
39 South Munn Ave., East Orange, N. J.

For More Information Circle No. 299 on Inquiry Card—Page 17

Let RHEEM

# RIGID BARRIER\* PACKAGING

reduce your shipping,  
packaging and handling costs  
...and keep your product safe

Rheem's complete and specialized Rigid Barrier Packaging Department is staffed with creative and expert packaging engineers. They have had many years of experience in designing all types of hermetically sealed containers for all kinds of products, as well as in selecting the best dunnage material for shock and vibration isolation. And these men, who are equipped to take over all or part of your packaging program, are proving that Rheem Rigid Barrier Containers are the safest, and most economic way to ship even the most intricate and delicate products.

Rheem's vast facilities are also utilized in producing Rigid Barrier "AN" Containers under military specification MIL-C-6054, meeting the requirements of MIL-P-116B specifications. "AN" Containers are available in a range from 1½ to 55 gallons, including multiple lengths and capacities. In other words, Rheem can solve any packaging problem from small engine parts to complicated electronic gear.

Rheem also has a complete line of light gauge Rigid Barrier Containers for industrial use—electronic tubes, automotive and diesel parts, precision instruments, or any other product requiring special packaging protection. And for pennies extra, Rheem will lithograph a container with your trademark, or design, and in any number of colors.

Whatever your product, chances are that Rheem engineers have already found a way (or can quickly find one) to package it safely in steel. And probably more economically than before, whether the container is for re-use or one-time shipment. Why not write today for details!

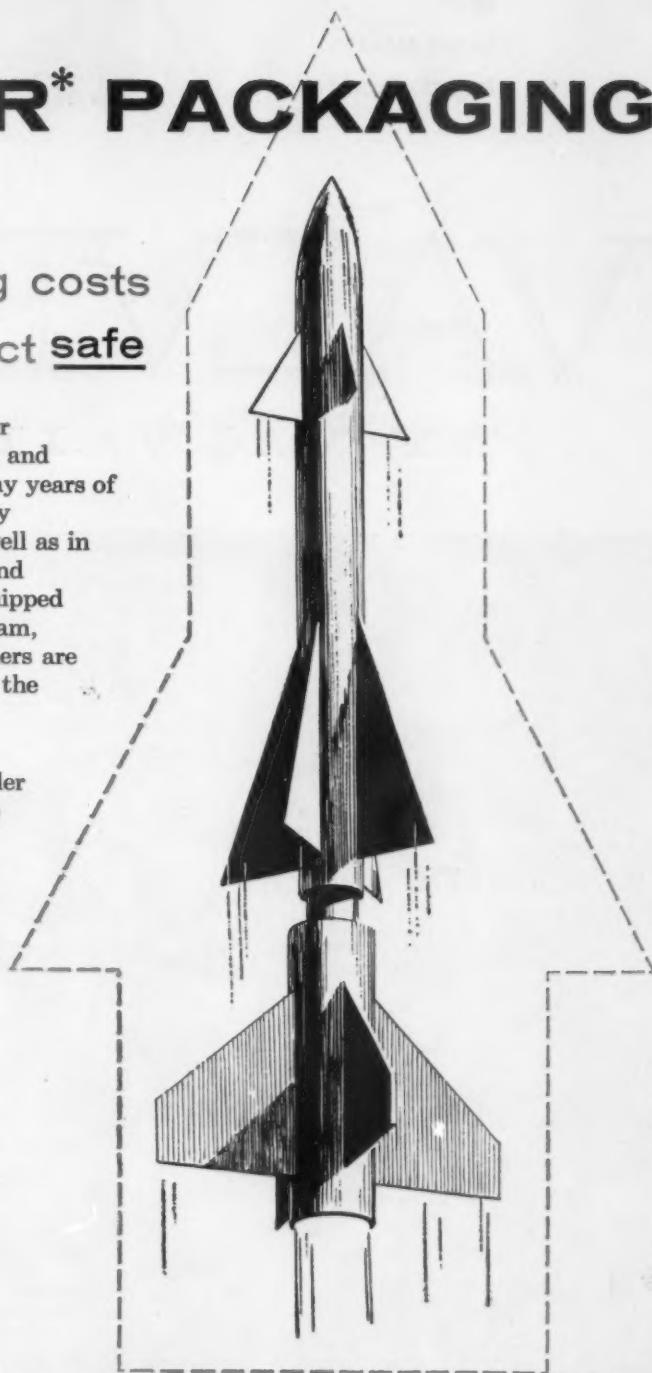
\*Trade-Mark of Rheem Manufacturing Co.

YOU CAN RELY ON



WORLD'S LARGEST MANUFACTURER OF STEEL SHIPPING CONTAINERS

RICHMOND AND SOUTH GATE, CALIF., HOUSTON, CHICAGO, NEW YORK,  
NEW ORLEANS, LINDEN, N.J., AND SPARROWS POINT, MD.



Rheem designs and produces Rigid Barrier Containers for Guided Missiles, Electronic Tubes, Telephone Equipment, Precision Instruments, Aircraft Engines, Torpedoes, Auto and Diesel Parts, and other hard-to-ship products.

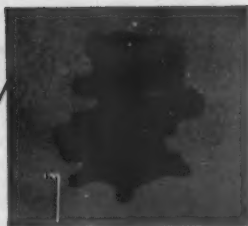
RHEEM MANUFACTURING COMPANY — RIGID BARRIER PACKAGING DEPARTMENT  
1701 W. Edgar Road, Linden, New Jersey  
Please send me information on the RIGID BARRIER

PACKAGING OF \_\_\_\_\_  
NAME \_\_\_\_\_  
POSITION \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

P-8



air  
vacuum  
hydraulic



# VALVES

BY VALVAIR

*Compare quality*

*Compare delivery*

*Compare service*

Speed King single solenoid, pilot-operated four-way valve shown.

Complete line—thousands of valve combinations from ten different control assemblies, five body types, five sizes. Solenoid and pilot valves built to JIC standards. Valvair Corporation, 454 Morgan Ave., Akron, Ohio.

Compare and you'll buy

## Valvair

Immediate delivery from stock

## Improving Tool Life With Titanium Carbide

A tougher, easy-to-grind, high titanium carbide with nickel binder is on the market. It is claimed to improve tool life in precision finishing and boring of steels. Tests have shown the new carbide to be much tougher than carbides normally employed for finishing steel and, although not quite as hard as cobalt binder carbides, to be equally wear-resistant. Its transverse rupture strength is about 200,000 psi with hardness about 91.5 Rockwell A. The carbide was developed by General Electric Co., Carbology Dept., Detroit, Mich.

## New Air Force Univac Computer



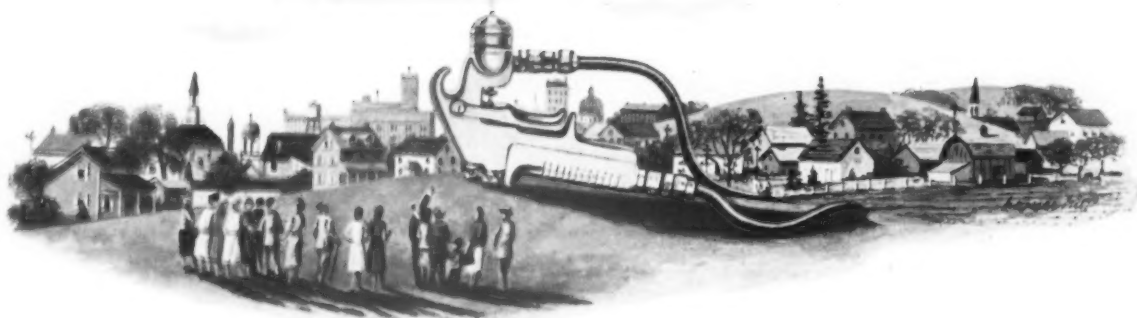
Two revolutionary developments in high-speed, general purpose electronic computer construction were revealed in a demonstration of the new, compact Remington Rand Univac AF/-CRC Magnetic Computer, designed and built for the Air Force Cambridge Research Center at Lawrence G. Hanscom Field, Bedford, Mass.

As versatile as the giant electronic "brains," the latest in the Univac family can be housed in about 250 square feet. Its computer unit is only 6' high, 6' 6" long and 18" deep. Its desk-sized console, housing the operator controls, the paper tape, input-output unit and the direct entry typewriter, is only four feet, six inches high, six feet long and three feet deep.

The Univac Magnetic uses tiny pulse-amplifying devices known as Ferractors in its internal magnetic-core circuitry and a five-by-three inch magnetic drum, spun at 16,500 rpm, to accomplish the reduction in size without sacrifice of speed or capacity.

For More Information Circle No. 302  
on Inquiry Card—Page 17→

Now every town  
can strike it rich—in color



THERE'S MORE COLOR in your daily life today, thanks to new and better lacquers. One big reason for their increased use is Shell Chemical's development of *ketones*—a remarkable family of solvents with a tremendous "appetite" for nitrocellulose.

Ketone solvents cut production costs, because they permit use of low-cost diluents, yet dissolve *more* lacquer solids—

insuring greater coverage with each pass of the spray gun. Result: ketone solvents make it easier for lacquer formulators to provide handsome, durable, colorful protective coatings for hundreds of familiar products—from furniture to automobiles.

The ketone family of solvents is another Shell Chemical contribution to the improved quality and lower cost of basic consumer and industrial products.

**Shell Chemical Corporation**

*Chemical Partner of Industry and Agriculture*

NEW YORK



# purchasing people

in the news

**John P. O'Leary** has been named purchasing agent for the standard control division, Beaver, Pa., of Westinghouse Electric Corp., Pittsburgh. He succeeds W. C. Meyer, who has been named purchasing agent for the company's East Pittsburgh divisions. Mr. O'Leary joined Westinghouse at East Pittsburgh in 1941, leaving in 1942 for service in the U.S. Army. He rejoined the company in 1950 as an expeditor in the purchasing department at Lima, O. In 1953 he was made supervisory buyer at the radio-television division, Metuchen, N. J. He was assigned to the headquarters purchasing staff in 1955.

**William R. Gerhardt** has been made director of procurement for

Remington Rand, a division of Sperry Rand Corp., New York. Mr. Gerhardt joined Remington Rand in 1950 as assistant director of procurement.

The Footwear and Foorring Division, B. F. Goodrich Co., Watertown, Mass., has appointed **Arthur B. Porter** manager of purchasing. He succeeds Charles L. Sheldon, who retired after 47 years with the company. Mr. Porter joined Hood Rubber Co., which later became a B. F. Goodrich division, in 1919. He has been deputy manager of purchasing since 1954.

**Daniel L. Shakotko** has been made purchasing agent for Dodge car operations. Formerly with

Chrysler Corp. as supervisor of productive material purchases, Mr. Shakotko began his automotive career in 1948 with another manufacturer. He became a Chrysler jet engine buyer in 1951 and a raw material buyer the following year.

**George N. Mac Fadyen** has been named purchasing agent by Wales-Strippit Corp., N. Tonawanda, N. Y. He succeeds Clark A. Ralph, who will devote his full time to a preventive maintenance program and planning for future plant expansion. Mr. Mac Fadyen joined Wales-Strippit four years ago as an expeditor. In 1951, he was appointed assistant purchasing agent. He is a member of the N.A.P.A.



W. R. Gerhardt



D. L. Shakotko



G. N. Mac Fadyen



# Riegel

## PAPER

CORPORATION

Specialists in  
Food and Chemical

# FILTER PAPER

# Riegel

## TEXTILE

CORPORATION

Specialists in  
Bleached and Unbleached

# FILTER CLOTH

... now supplying many of the largest companies, in such widely varying fields as chemicals, coffee, oil, home appliances and milk!

**INQUIRIES INVITED! JUST SEND COUPON!**

### RIEGEL PAPER CORPORATION

P. O. Box 250, Grand Central Station  
New York 16, New York

- ☐ Send complete information on **FILTER PAPER** like attached sample.
- ☐ Send general information.
- ☐ Have salesman call.

ITEM TO BE FILTERED \_\_\_\_\_

MR. \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

### RIEGEL TEXTILE CORPORATION

P. O. Box 250, Grand Central Station  
New York 16, New York

- ☐ Send complete information on **FILTER CLOTH** like attached sample.
- ☐ Send general information.
- ☐ Have salesman call.

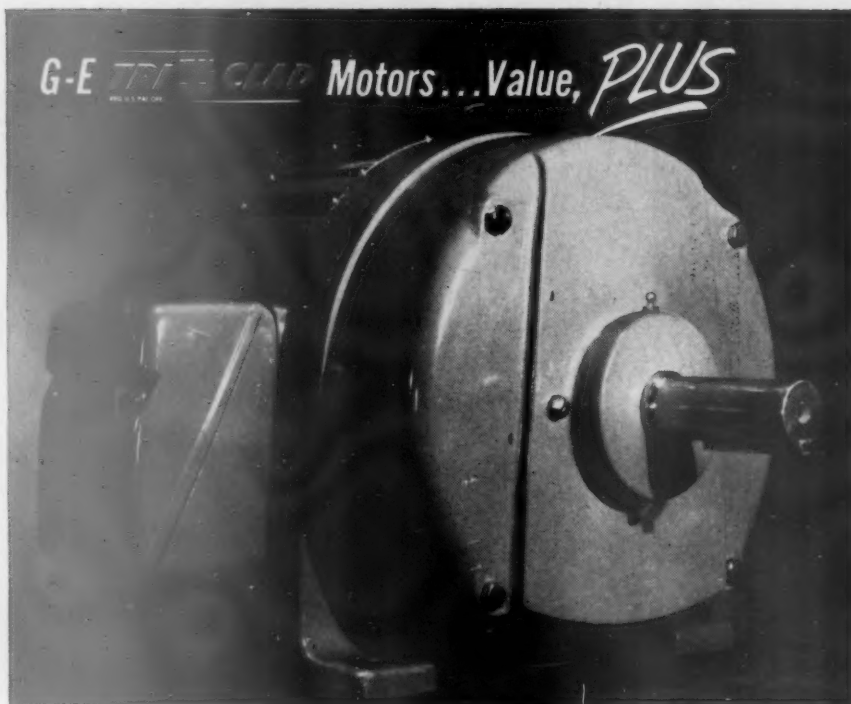
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MR. \_\_\_\_\_

TITLE \_\_\_\_\_

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G-E **TRI-CLAD** Motors...Value, *PLUS*

## General Electric **TRI 55 CLAD** motors are sound-tested for quiet operation

Now motor users do not have to worry about irritating motor noise. Every Tri-Clad '55' motor shipped from G.E.'s Medium Induction Motor Department must pass a noise chamber test to prove that its operating sound is not objectionable, but is pitched to a frequency that is pleasing to the human ear.

• This improved sound level of Tri-Clad '55' motors is achieved by sonant design and precision manufacturing techniques. Manufacture of rotor and stator punchings and motor frames is closely controlled by automatic production machinery to assure close tolerances. Bearing housings are carefully machined for proper fit. Each component is engineered not only for its operating efficiency, but also for its effect on over-all motor noise. The result — your plant operation has no objectionable motor noise to bother employees working near Tri-Clad '55' motor-driven equipment.

• Individual sound test to assure improved sonance is one more **PLUS** value you get only when you



A complete sound chamber test checks each General Electric Tri-Clad '55' motor to assure no objectionable motor noise in your plant.

specify Tri-Clad '55'—the motor that is triple-protected against electrical, physical, and operating damage. Order from your local G-E Distributor's stock or your nearest G-E Apparatus Sales Office. These motors, in  $7\frac{1}{2}$ –30 hp ratings, are manufactured by the Medium Induction Motor Department, General Electric Company, Schenectady 5, New York.

866-6

*Progress Is Our Most Important Product*

**GENERAL ELECTRIC**

For More Information Circle No. 304 on Inquiry Card—Page 17

purchasing  
people

The Charles William Doepke Mfg. Co., Rossmoynne, O., has appointed **Lillian Hanselman** purchasing director. Mrs. Hanselman has been assistant purchasing



Lillian Hanselman

agent since 1951, having joined the company in 1949 as an inventory control clerk. She is a member of the Cincinnati Chapter, Women's Purchasing Association of N.A. P.A.

**Joseph P. Atkinson**, who has been in charge of purchasing and stores at the Parkersburg, W. Va., plant of L.O.F. Glass Fibers Co., Toledo, has been named general purchasing agent and transferred to Toledo. Before joining L.O.F. Glass Fibers, Mr. Atkinson was with Libbey-Owens-Ford for four years, and prior to that, with American Viscose Corp. for 17 years.

**Herman C. Weber** has been appointed purchasing agent for Hammermill Paper Co., Erie, Pa. He succeeds Edward F. Fletcher, who has retired. It was also announced that **Roger G. Sturtevant** has succeeded Mr. Weber as assistant purchasing agent. Mr. Weber joined Hammermill in 1943 as a staff accountant and internal auditor. He became head of the tax and audit section in 1948, and was made assistant purchasing agent in 1952.

A number of changes in the Purchasing Department of Blaw-Knox Co., Pittsburgh, have been announced. **Harold F. Fiegenschuh**, who has been director of purchases for the Continental Foundry and Machine Division, has retired after 44 years with the organization. **D. S. McCleary** has been named assistant director of purchases for Blaw-Knox Co. He was formerly Pittsburgh district purchasing agent for Continental Foundry and Machine, having joined the company in 1952. Named to posts as staff purchasing agents are: **Wayne Rawley, Jr.**, formerly assistant to the director purchases; **H. P. Bork**, formerly Rolls Division purchasing agent; and **B. R. Lauer**, formerly Chicago district purchasing agent for Continental Foundry.

**H. Brainard Brown**, formerly purchasing agent for Nosco Plastics, Inc., Erie, Pa., is now chief production engineer. Succeeding him as purchasing agent is **Charles Wingerter**, formerly chief inspector.

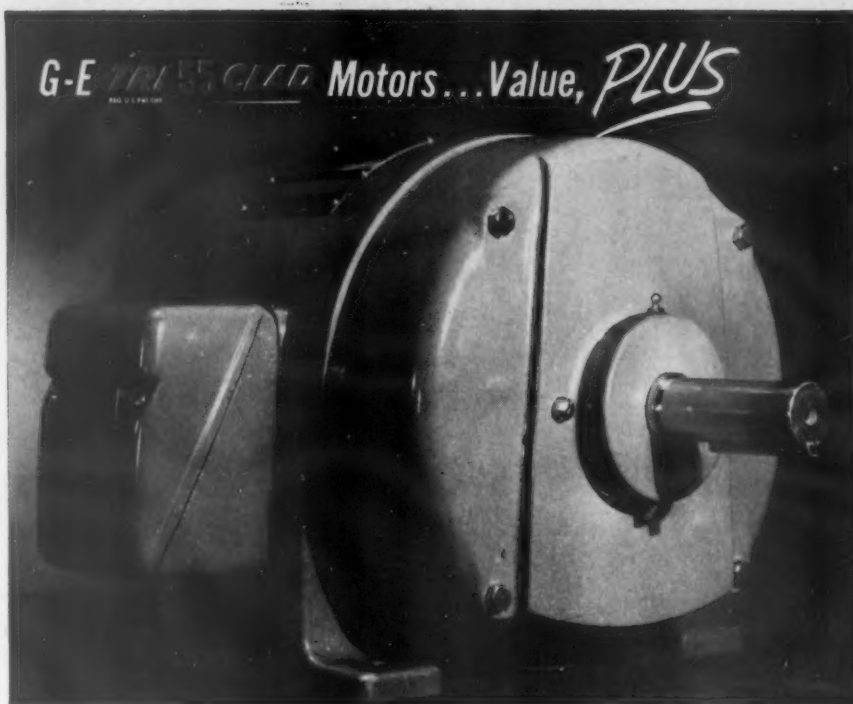
**James R. Keough** has been appointed manager of manufacturing at Fenwal Inc., Ashland, Mass. He will be responsible for pur-



**J. R. Keough**

chasing activities, production, manufacturing methods, quality control, standards and systems. Mr. Keough joined Fenwal in 1951, where he served as manager of personnel, purchasing and production activities. He was previously employed by Westinghouse Electric, at Springfield, Mass. He is a member of the N.A.P.A.

AUGUST, 1956



## General Electric **TRI 55 CLAD** motors are now shipped to you 20% faster

Now, General Electric Tri-Clad '55' motors can be delivered over 20 per cent faster than before. Production time on these motors has been cut from 120 to 25 hours at G.E.'s new motor plant in Schenectady, New York. Called the "most modern integral-horsepower motor plant in the world," this new facility features many new and revolutionary manufacturing techniques designed to cut production time and give you better service.

- **Unveiled April 14, 1956** and already in quantity production, this new seven-million-dollar plant produces Tri-Clad '55' motors—7½ to 30 hp—on a true mass production basis. Frames are machined, stators dipped, shafts and end shields machined to close tolerances, in push-button operations.
- **This accelerated production and shipping cycle is one more PLUS value you get when you specify**



Daily, motors pour into gravity stock racks at new Tri-Clad '55' motor plant, Schenectady, N. Y.—ready for prompt shipment.

Tri-Clad '55'—the motor that is triple-protected against electrical, physical, and operating damage. Order from your local G-E Distributor's stock or nearest G-E Apparatus Sales Office. These Tri-Clad '55' motors, in 7½ to 30 hp ratings, are manufactured by the Medium Induction Motor Department, General Electric Company, Schenectady 5, N. Y.

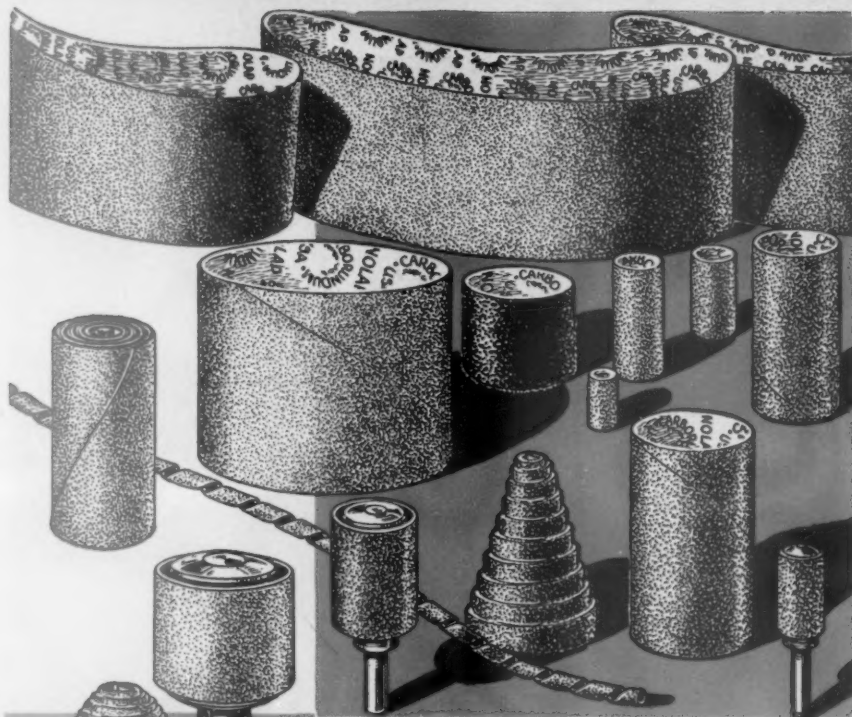
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*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**

For More Information Circle No. 305 on Inquiry Card—Page 17





## ABRASIVES

Cleveland No-LAP Abrasive Sleeves and Expanding Drums, Belts, Smoke Hole Cleaners and Abrasive Cartridge Rolls and Mandrels

### MEET EVERY NEED

... in sanding, polishing and cleaning up.

### CLEVELAND ABRASIVES

give long wear, and their constant cutting surface means improved performance!

Whether the job be great or small, Cleveland Abrasives save time, money and effort.

For good quality ... call CLEVELAND!

Send for our  
**NEW FOLDER**  
giving complete data.  
SAMPLES gladly  
furnished of the grit  
and size you desire.

PLANTS  
AND  
SALES OFFICES:  
CLEVELAND  
DETROIT  
CHICAGO  
MEMPHIS  
LOS ANGELES  
PLYMOUTH, WIS.  
JAMESBURG, N. J.  
OGDENSBURG, N.Y.

ABRASIVE  
DIVISION  
CLEVELAND

THE  
**CLEVELAND CONTAINER**  
COMPANY •

6201 BARBERTON AVE., CLEVELAND 2, OHIO

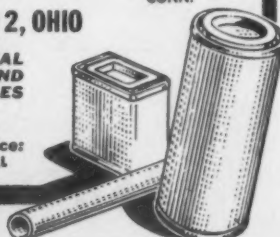
• ALL-FIBRE CANS • COMBINATION METAL  
AND PAPER CANS • SPIRALLY WOUND  
TUBES AND CORES FOR ALL PURPOSES

CLEVELAND CONTAINER CANADA, LTD.

Plants & Sales Offices:  
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ROCHESTER, N. Y.  
WEST HARTFORD,  
CONN.



purchasing  
people

The appointment of **Armstrong H. Kolb** as purchasing agent for the Ceramic Division has been



**A. H. Kolb**

announced by Champion Spark Plug Co., Toledo. He was previously employed by Huck Mfg. Co. and the Power Plant Division of Ready Power Co.

Schick, Inc., Lancaster, Pa., has appointed **Arthur Heisch** as purchasing agent. He succeeds

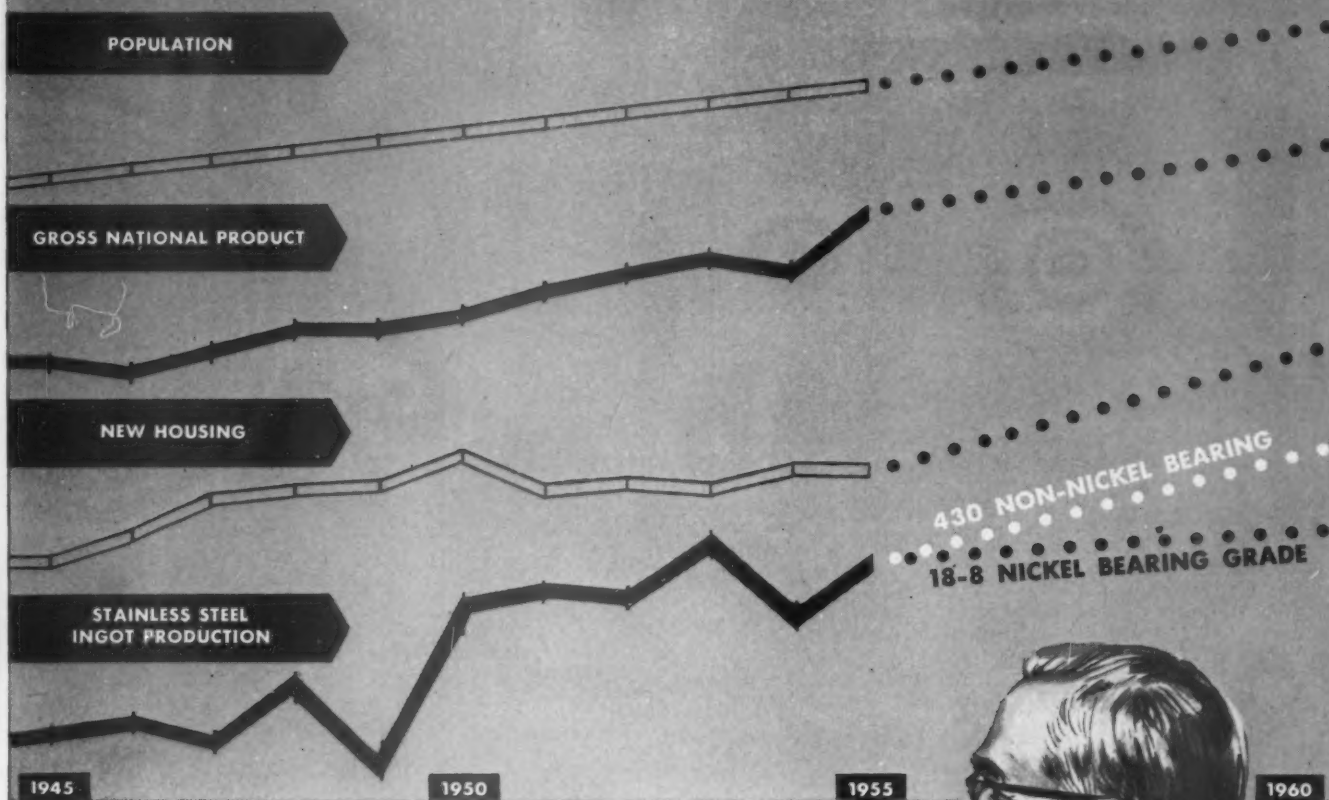


**A. Heisch**

C. W. Shader, who has retired. Mr. Heisch joined Schick in 1950 and was made assistant purchasing agent in 1952. Prior to joining Schick, he was with Bethlehem Steel Corp. He is a member of the Lancaster Association of Purchasing Agents.

For More Information Circle No. 306 on Inquiry Card—Page 17

## PULSE OF BUSINESS



### Now! you can grow with your markets

... because Washington Steel Corporation has taken two big steps forward:

1. Making available an adequate and dependable source of supply for Type 430 stainless steel.
2. Reducing the base price of Type 430 sheets to provide you with savings of \$200 per ton as compared to Type 302 stainless sheets.

Many designers and fabricators who are currently using Type 302 stainless can, in numerous applications, specify Type 430 straight chromium stainless and take advantage of the 10 cents per pound difference in base price. Some of our customers are already saving more than \$200 per ton using our 430 MicroRold stainless steel.

The steel industry estimates that 50% of all stainless sheet applications could satisfactorily employ Type 430,

the least expensive of all stainless grades, as an economical and practical material. When properly applied, Type 430 has all the desirable qualities of beauty, corrosion resistance, strength, long life and low maintenance that no other material, *except* stainless, can offer.

We are currently producing our MicroRold Type 430 sheets in thicknesses .005" to .109" with 2B or 2D finishes; and in thicknesses .010" to .109" in No. 3, 4 and 7 finishes.

Type 430 sheets are immediately available for delivery without restriction.

We are supplying the 18-8 grades against rated orders only.

**Washington Steel**  
Corporation

8-N WOODLAND AVE., WASHINGTON, PA.



Send for your copy, "Care  
and Use of 430 Stainless"

1500°  
IN 5 MINUTES  
2300°  
IN 30 MINUTES

*johnson*  
NUMBER 120 HI-SPEED FURNACE

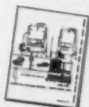
That's the kind of quick heating action you get with this compact, powerful furnace. It's economical to operate, too. Fast heat-up saves time and gas. High-temperature insulated firebox, 5" by 7¾" by 13½", gives even hardening of high speed and carbon steel dies, tools and small parts. Temperature easily regulated. G.E. motor and Johnson Blower included. 120,000 BTUs per hour.

Pedestal style, F.O.B. Factory....\$167.00  
No. 120 also available in bench style.

Write today for free Johnson Catalog

Johnson Gas Appliance Company

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If it burns gas look to Johnson  
Since 1901

For More Information Circle No. 308 on Inquiry Card—Page 17



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**Rubber Bands**  
OUTSTRETCH  
OUTLAST  
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All Plymouth Standard Bands Made to Federal Specifications

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For More Information Circle No. 309 on Inquiry Card—Page 17

purchasing  
people

Harry N. Wada has been named purchasing agent for Armour Research Foundation of Illinois Institute of Technology, Chicago. Mr. Wada joined the Foundation in 1954 as assistant purchasing agent. He is a member of the N.A.P.A.



H. C. Cook

Three appointments in the central purchasing department have been announced by Chrysler Corp., Detroit. **Harold C. Cook** is now general purchasing agent. He joined Chrysler in 1933, serving first in the service parts department and then with the DeSoto Division for 13 years as assistant superintendent of production and supervisor of plant planning. In 1948 he went to Chrysler's central purchasing department as a steel buyer, and was made a purchasing supervisor in 1953. In 1955, he was named purchasing agent for the Dodge Division. **William G. Petty** is now purchasing agent-production materials. Mr. Petty joined the corporation in 1951 as a buyer in the Highland Park plant. He served as assistant resident purchasing representative for the Detroit tank plant in 1952. **Cecil C. Chauvin** is now manager-research and analysis. He joined Chrysler Corp. of Canada, Ltd., in 1940 as a cost accountant.

For More Information Circle No. 310  
on Inquiry Card—Page 17→  
PURCHASING



How you profit by using . . .

# 6 KITS TO MODIFY GENERAL ELECTRIC MAGNETIC STARTERS



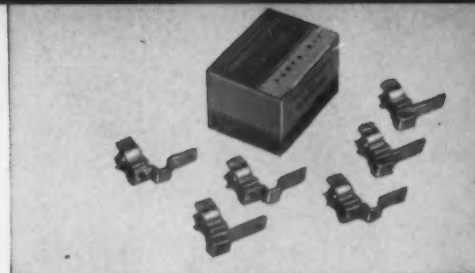
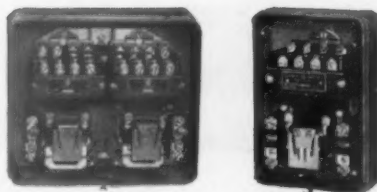
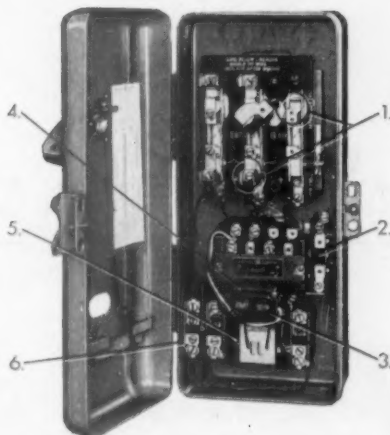
4. **SELECTOR SWITCH** fits into same cover knockout as the pushbutton unit, and gives you a choice of ON, OFF, or AUTO. setting.



5. **STRONGBOX COIL** can be changed quickly and easily for different voltage ratings. There is no need to disturb power wiring.



6. **3RD OVERLOAD RELAY** can be added, whenever needed, to G-E magnetic starters. A screwdriver is the only tool necessary.



1. **FUSE CLIPS** can be easily changed on all G-E combination starters for use with different line current ratings or voltages.



2. **AUXILIARY INTERLOCKS** can add up to four additional control circuits to provide maximum flexibility for magnetic starters.



3. **PUSH BUTTON** for START-STOP operation can be mounted through knockout provided in the cover of G-E magnetic starters.

## KITS PERMIT ON-THE-SPOT MODIFICATION OF G-E STARTERS

These six modification kits modify any G-E across-the-line non-reversing, combination, or reversing starter. This means that your distributor can give you off-the-shelf delivery of all these forms.

If you now stock modified starters, these kits—plus standard starters—will permit you to cut inventories of "specials" and

still have the starters you need. All modifications can be made quickly, and a screwdriver is the only tool needed.

Send in the coupon below for a new bulletin, complete with ordering data and "how-to-do-it" pictures of each kit. Your nearest General Electric Distributor will be glad to give you additional information.

Advertising and Sales Promotion Section E733-17  
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Please send me a free copy of **MODIFICATION KITS FOR MAGNETIC STARTERS GEA-6481**

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**GENERAL ELECTRIC**

# ANNOU

greatly expanded  
**Air Express** service

**\*RADIO-EQUIPPED  
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**†TELETYPE NETWORK**

**More speed!  
Constant shipment control!  
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# NCING:

\* In one metropolitan center alone, Air Express has reduced average pick-up and delivery time by more than half! (And it was notably efficient to start with!)

Amazingly — by introduction of new equipment and new methods — Air Express is chalking up new records for cutting “ground time” of shipments.

Radio-equipped trucks in leading markets are now in constant touch with Air Express Dispatchers. Pick-up time is cut to a minimum. Deliveries are expedited.

All this speed-up of service with Air Express is now yours — with no added charges!

† Air Express now can practically pinpoint shipments. A key-city network is linked together by private teletype service, tied in with scores of other communities in a nationwide network.

All along the route, teletype carries the vital information of all load messages — weight, number of pieces, destination, plus special information or instructions.

Thus, the greatest possible control of Air Express shipments — at no increase in cost to you!

In fact, thousands of users regularly find “Air Express costs less” than any other service!



*Two-way Radio of the most modern design connects this Air Express truck with central Dispatcher — cuts “ground time” for shipments more than half—yet, costs you no more!*



*New Teletype Service enables you, the shipper, or your consignee, to “keep an eye” on Air Express shipments — trace them en route — meet them on time — and at no extra cost!*

*For the world's most efficient, most complete air shipping service—linking some 23,000 U. S. communities, all by one through carrier—call*



**GETS THERE FIRST** via U.S. Scheduled Airlines

**CALL AIR EXPRESS . . . division of RAILWAY EXPRESS AGENCY**

For More Information Circle No. 311 on Inquiry Card—Page 17



# At your call... the widest selection of SILVER BRAZING ALLOYS

Here are two *decisive* reasons why Handy & Harman is your No. 1 source of supply for silver brazing alloys:

**1.** Handy & Harman offers *the widest selection* and is prepared to supply any of the alloys in the form you require — namely — wire, rod, sheet, rings, washers, filings, special forms and shapes.

**2.** As leading producer of silver brazing alloys and No. 1 authority on their application, Handy & Harman places at your call, without obligation, *the maximum technical and practical assistance* on any silver brazing question or problem.

GET THE FACTS ABOUT H&H SILVER BRAZING ALLOYS IN TECHNICAL BULLETIN No. T-1. Write for a copy today.

With it we'll send a list of H&H Distributors. There's one near you.



## H&H BT SILVER ALLOY, FILED

was the alloy from H&H's wide selection that proved just right for joining the concentric rings that form a part of Jennings vacuum variable capacitors made by Jennings Radio Mfg. Corp., San Jose, Calif. The BT Silver alloy filings are brushed on as shown preparatory to heating.



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MONTREAL, CANADA

purchasing  
people

Arthur S. Bradnick, senior buyer in the general purchasing department of Rockwell Mfg. Co.,



A. S. Bradnick



C. E. Hobbs

Pittsburgh, has been named purchasing agent for the company's Barberton, O., plant. He is succeeded as senior buyer by Clarence E. Hobbs, a buyer in the company's Pittsburgh Division for the past six years.

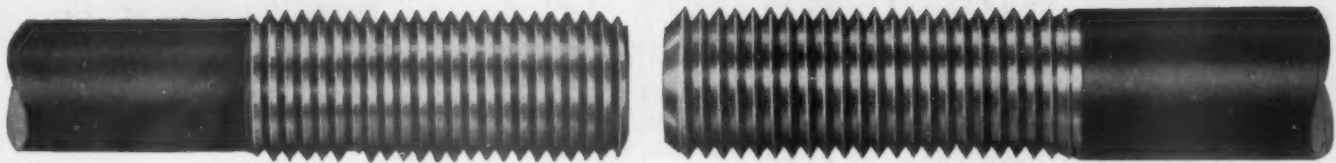


A. Fields

The appointment of Arthur Fields as purchasing agent for the Axle and Transmission Division has been announced by Chrysler Corp., Detroit. Mr. Field served as purchasing agent for the Marine and Industrial Engine Division for the past year. He joined Chrysler in 1935 as a stockman at Highland Park. He later served as die engineer and tool buyer before he was named machinery buyer for central purchasing in 1952.

PURCHASING

# ROLLED or CUT THREADS?



## Answers to questions we're often asked

**Q.** What is the important difference between cut and rolled threads?

**A.** A rod with a cut thread has an outside thread diameter which is the same as the body of the rod. Also, the end of the rod is usually pointed to remove the sharp starting thread.

Rolled threads have an outside diameter greater than the diameter of the portion of the rod next to the thread. And the end of the thread need not be pointed because a sharp starting thread is not present on a rolled thread.

**Q.** Which type of threads is better?

**A.** That's hard to say. But rolled

threads are often the better choice. There are several reasons:

1. In many instances, rolled threads are cheaper. This is true because of the weight savings. You buy less steel. Also, rolled threads can often be produced faster. The savings to the customer on the larger sizes is often substantial.

2. Rolled threads are likely to be smoother. And because cold-working hardens the threads, they are not as easily damaged. The cold-working also develops compressive stresses in the threads, making them more resistant to fatigue from repetitive stresses in bending or tension.

3. Because the thread-rolling process "cold-works" the steel in the threads, rolled threads have a slightly higher tensile strength than cut threads. This advantage, however, diminishes as the diameter of the rod or bolt increases.

**Q.** How can I be sure that rolled threads are the best choice for a particular application?

**A.** To learn the answer to this question, all you need do is get in touch with the nearest Bethlehem sales office. We'll be pleased to have one of our engineers call at your convenience, to study your bolting problem, and offer recommendations.

Here are the facts. The table below compares various standard rod sizes and shows the weight savings possible when rolled threads are used instead of cut threads.



| COARSE<br>THREAD<br>Size | ROLLED THREAD<br>STOCK<br>diam in. | WEIGHT<br>lb/ft | CUT THREAD<br>STOCK<br>diam in. | WEIGHT<br>lb/ft | WEIGHT<br>SAVINGS<br>pct | STRESS<br>AREA<br>sq in. | MINIMUM<br>BREAKING LOAD*<br>lb |
|--------------------------|------------------------------------|-----------------|---------------------------------|-----------------|--------------------------|--------------------------|---------------------------------|
| 1/4-20                   | 0.213                              | 0.121           | 0.240                           | 0.155           | 21.8                     | 0.0318                   | 2050                            |
| 3/8-16                   | 0.330                              | 0.291           | 0.365                           | 0.358           | 18.7                     | 0.0775                   | 5050                            |
| 1/2-13                   | 0.445                              | 0.529           | 0.490                           | 0.647           | 18.2                     | 0.1419                   | 9200                            |
| 3/4-10                   | 0.676                              | 1.222           | 0.740                           | 1.475           | 17.1                     | 0.334                    | 21700                           |
| 1 - 8                    | 0.908                              | 2.196           | 0.990                           | 2.640           | 16.8                     | 0.606                    | 39400                           |
| 1 1/4 - 7                | 1.144                              | 3.504           | 1.235                           | 4.110           | 14.8                     | 0.969                    | 63000                           |

\*Minimum breaking load for cut threads is based on ASTM Spec. A-306, Grade 65, which has a minimum tensile of 65,000 psi. Breaking loads for rolled threads of same grade will be about 5 pct higher. For other grades of steel, breaking load of cut or rolled threads is in proportion to the tensile strength of the steel.

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation  
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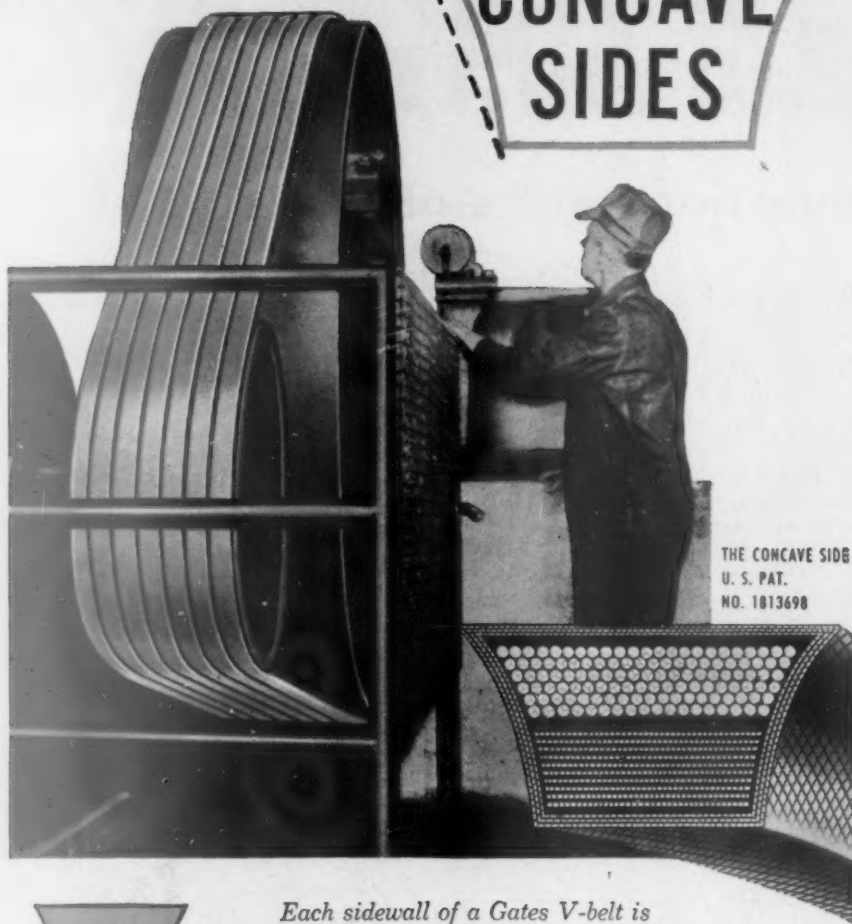
# BETHLEHEM STEEL



For More Information Circle No. 313 on Inquiry Card—Page 17

# Why you get more service from V-Belts with

## CONCAVE SIDES



Each sidewall of a Gates V-belt is concave (Fig. 1)—a precisely engineered curve that makes V-belts last far longer.

**HERE'S WHY:** on the bend around the sheave, the concave sides of a Gates V-belt fill out and become straight (Fig. 1-A). Thus the belt makes full contact with the sides of the sheave, grips the sheave *evenly*. This even contact distributes wear uniformly across the sides of the belt.

Uniform wear lengthens belt life; keeps costs down.

### MAKE THIS SIMPLE TEST



Bend a straight-sided belt (Fig. 2). The sides bulge at the bend causing uneven contact in the pulley groove (Fig. 2-A). Naturally, wear is greater at points indicated by arrows. Result: shorter belt life, increased belt costs.

To cut down-time and V-belt replacement costs, specify belts that grip evenly and wear longer. Specify Gates Vulco Rope—the V-belt with concave sides. There is a Gates distributor nearby who will quickly supply the belts you need. The Gates Rubber Co., Denver, Colorado—*World's Largest Maker of V-Belts.*

There are Gates Engineering Offices and Distributor Stocks in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

TPA 109



# Gates VULCO ROPE Drives

For More Information Circle No. 314 on Inquiry Card—Page 17

purchasing  
people

F. S. Jones has been appointed purchasing agent in charge of the assembly purchasing department of Tractor and Implement Division, Ford Motor Co., Birmingham, Mich. Mr. Jones joined



F. S. Jones

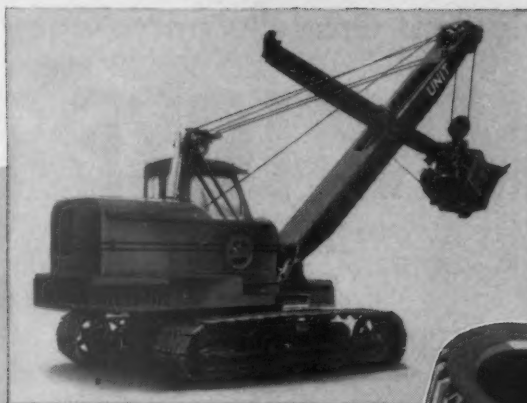
Ford in 1946 as a methods analyst in the central staff purchasing office in Dearborn. From 1947 to 1953 he was associated with the Ford Division. At the time of his transfer to Tractor and Implement Division, he was manager of Ford Division's purchasing administrative department.

Westinghouse Electric Corp., Pittsburgh, has named William C. Meyer purchasing agent of its East Pittsburgh divisions. He succeeds C. W. Ellingson, Jr., who has been named director of purchases for the company's apparatus group. Mr. Meyer joined Westinghouse in 1941 as assistant buyer at the steam division in South Philadelphia. In 1953, he was assigned to the headquarters purchasing staff, and was made purchasing agent for the standard control division, Beaver, Pa., later the same year.

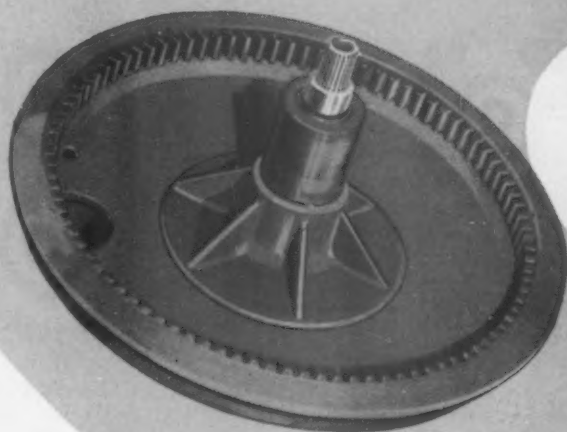
PURCHASING



Unit saves 2¼ man hours  
on each shaft machined from



## OSTUCO TUBING



Unit Crane & Shovel Corporation, Milwaukee, "lowered the boom" on costs by using OSTUCO tubing for vertical traction shafts in its line of heavy construction equipment. By eliminating a center-boring operation, Unit saved 2¼ hours machining time on each shaft.

OSTUCO tubing has tremendous strength to absorb the constant shock and strain to which Unit equipment is normally subjected and machines easily to precision tolerances.

Cash in on the economy of OSTUCO'S unique "Single-Source-Service"—complete tubing facilities "under one roof"—by contacting your nearest OSTUCO sales office.



VERTICAL TRACTION SHAFT



## OSTUCO TUBING

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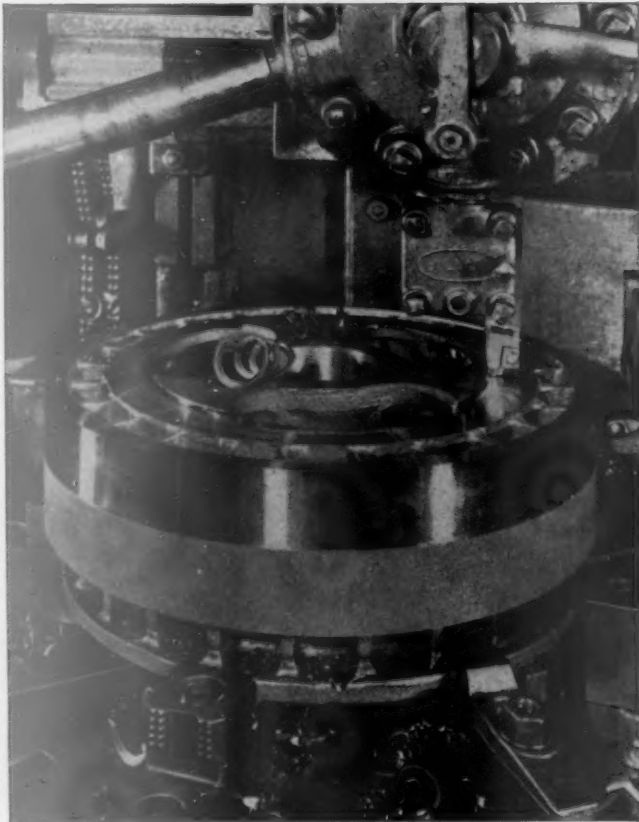
CANADA, RAILWAY & POWER ENGR. CORP., LTD.

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By using "Equivalent Grade" Charts when buying carbides...

# YOU MAY LOSE THOUSANDS BY SAVING A FEW

Relying on "Equivalent Grade" Charts can lead to purchasing on low initial cost alone... whereas production ability really determines a tool's worth



**TESTS ON 1045 CAST STEEL** by a Chicago machine manufacturer demonstrate tremendous differences in carbides' production abilities. With Grade "X," as many as 16 clamp-on-type carbide inserts were required for a single facing cut on this power shovel clutch and brake drum.

A single Grade "Y" insert (Carboloy Grade 370) took nine cuts without showing any appreciable wear... under identical operating conditions. Result: over-all tooling cost reduced 90% on the 15-piece comparative run.

**T**HE SO-CALLED "Equivalent Grade" Charts may be costing your plant literally thousands of dollars a year... in lost production, wasted manpower, higher machining expense.

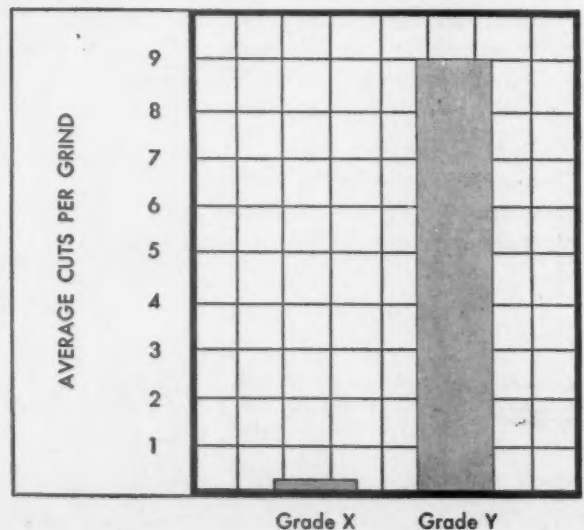
These charts conceal the tremendous differences in production abilities that always exist among various "equivalent" carbide grades. Worse, they tend to justify using initial cost, rather than over-all performance, as the basic criterion for purchasing carbide tools.

#### In-plant tests prove production abilities vary

What will happen to production if carbides are selected on the basis of the "Equivalent Grade" Charts? The case history at left gives the answer. It is typical of hundreds in the Carboloy files.

The average "Equivalent Grade" Chart lists no fewer than 14 different grades for this job... and implies that they can be used interchangeably. But in-plant comparative tests proved that no two grades could provide the same results.

When Grade "X" was selected, for example, an average of four inserts were required to take a single facing cut. But when Grade "Y" was used, a single carbide insert produced nine cuts... a tool life increase of 36 to 1 (Graph No. 1).



Graph No. 1—Production Ability Comparisons

# OF PRODUCTION DOLLARS TOOLING PENNIES

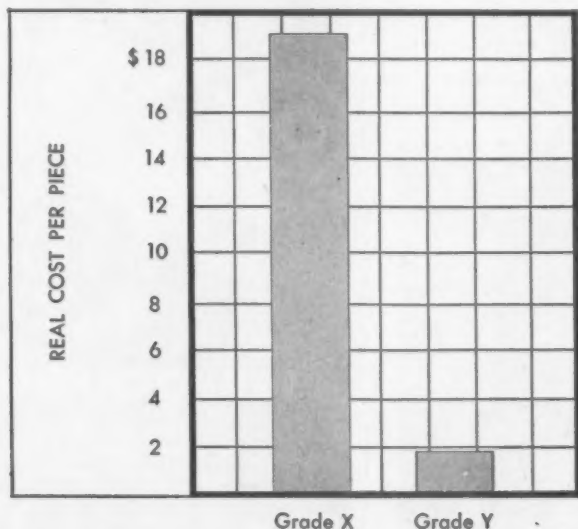
Why the tremendous difference? Grade "Y" simply had more production ability. It brought far more production per grind, reduced downtime, and drastically lowered grinding costs. Yet nothing in the "Equivalent Grade" Charts could predict this.

## Initial Costs vs. Real Costs

Because "Equivalent Grade" Charts imply that all grades perform alike, they make it logical to assume that low initial cost is the most important consideration. A little arithmetic will prove that the *real* cost of carbides bears no relation to initial cost.

With Grade "X," total tooling cost for 15 pieces was \$285.68 (16 tools at \$13.04 each; 44 regrinds at \$.41 each; 59 tool changes at \$1.00 each). Machining cost per piece was \$19.05.

Grade "Y" inserts cost \$1.30 more initially. But total cost for 15 pieces was just \$29.68 (2 tools at \$14.34 each; 1 tool change at \$1.00; nothing for regrinds). Real cost per piece with Grade "Y" was \$1.98 . . . a reduction of 90%!



Graph No. 2—Real Cost Comparisons

Now add to these savings in tool cost, downtime, and grinding charges, the equally important savings from lower total manpower costs and reduced inventories. Then multiply the total by the number of jobs in the plant where similar cost reductions can be realized. You'll see why a few pennies more per tool is a small price to pay for carbides that can save you so much.

## Cost-conscious purchasers specify Carboloy Extra-Performance Carbides

Grade "Y" in the preceding example is Carboloy Grade 370. It is one of three new, extra-performance steel-cutting carbides. These three grades—330, 350, and 370—cost slightly more initially because they are made by a unique and more costly process. But their performance is so superior to conventional carbides that there is no classification on the "Equivalent Grade" Charts to fit them.

Because of their extra production ability, these carbides easily show up the glaring shortcomings of the "Equivalent Grade" Charts. But even on conventional grades, actual tool comparisons prove the charts cannot be relied upon.

That's why we make this suggestion: Have comparative tests run in your own plant, on your own jobs. When the results are in, you too may find that your plant can save thousands of dollars a year simply by switching to carbides with greater production abilities.

With so much money at stake on every carbide tool used in your plant, you can easily see why the phrase "or equivalent" is rapidly becoming obsolete on tool specifications. These tests prove it really pays to specify Carboloy cemented carbides—by name.

If you would like a more detailed discussion of the whole subject of Initial Costs vs. Real Costs, and the fallacies of the so-called "Equivalent Grade" Charts, write today for a Carbide Sales Engineer to call on you. Metallurgical Products Department of General Electric Company, 11143 E. 8 Mile Street, Detroit 32, Michigan.

"Carboloy" is a trademark of General Electric Company

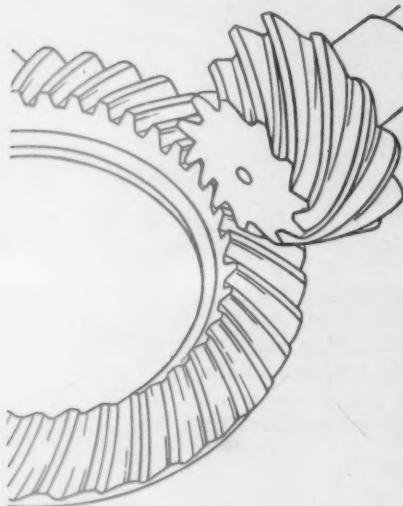
# CARBOLLOY

C E M E N T E D C A R B I D E S

For More Information Circle No. 316 on Inquiry Card—Page 17



# precision lapped



## Philadelphia GEARS world standard of excellence

To assure you of the ultimate in surface finish and tooth bearing, we have special lapping machines for all straight bevel, spiral, bevel, Hypoid and Zerol gears. These machines hold the gears at the proper distance while lapping, and this distance is permanently etched onto the gears to facilitate assembly.

We also have equipment for lapping spur, helical, double-helical and continuous tooth herringbone gears on specified centers... Of course, Philadelphia lapped gears run smoother, operate at highest efficiency and last longer in service.

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For More Information Circle No. 317  
on Inquiry Card—Page 17

## purchasing people

Foote Mineral Co., Philadelphia, has announced the appointment of William Raynor as director of purchases. Walter J. Brooking, formerly general purchasing agent, has been named



W. Raynor W. J. Brooking

assistant director of purchases. Mr. Raynor, who has been with the company since 1942, has served as manager of special products and as administrative assistant, before receiving his new assignment. Mr. Brooking has been employed in a purchasing capacity with the company since 1951.

The Pennsylvania Railroad has announced the appointment of Warren R. Elsey as vice president,



W. R. Elsey

purchases, stores and insurance. He succeeds John C. White, who has retired after 44 years of railroad work. Mr. Elsey has been assistant vice president, purchases, stores and insurance since 1944.

## Promet Engineered Bronze

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Guarantee Superior Service  
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SEND PRINTS,  
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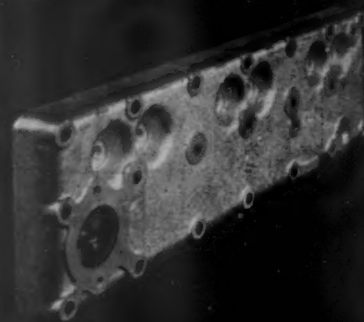
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"Bearing Specialists Since 1919"

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BORES MOTOR BLOCKS 22% FASTER—  
AND WITH 28% LESS TOOL WEAR



...thanks to  
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Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they COST YOU NO MORE... because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.

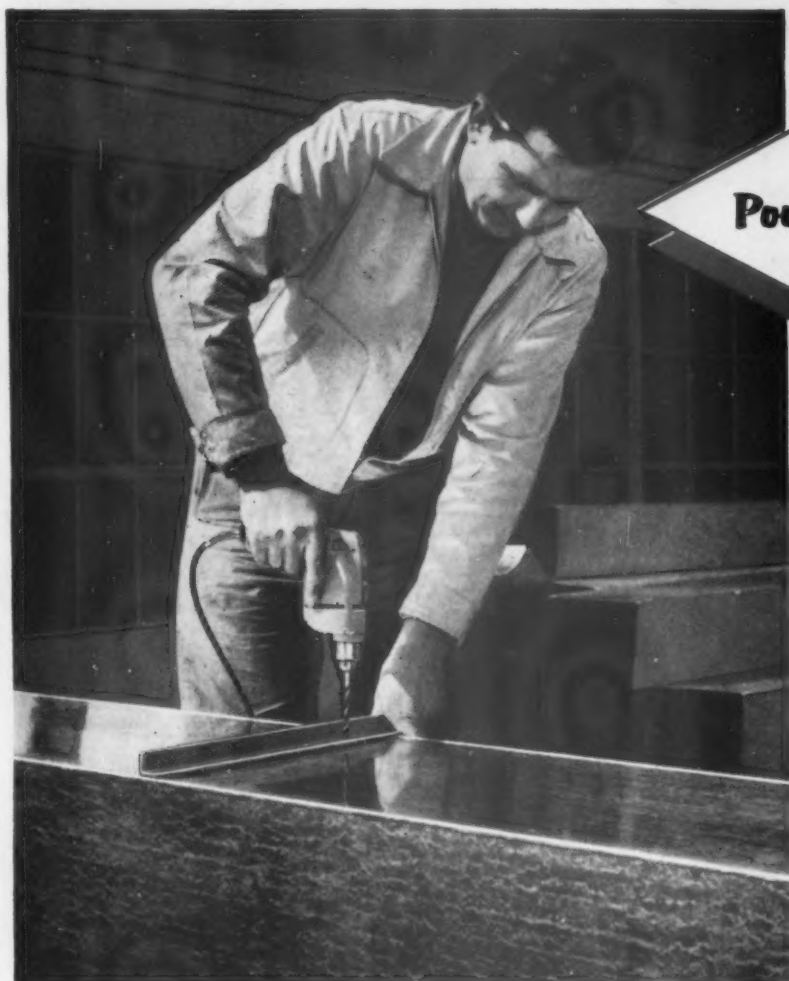
FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 34, Niagara Falls, N.Y. 84-54

**CARBORUNDUM®**

For More Information Circle No. 319  
on Inquiry Card—Page 17

PURCHASING

# New SKIL 1/4" Drill...



**Up to 40% More  
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in its Price Range!**

**Faster, easier, more accurate drilling  
... in maintenance and production!**

Only SKIL offers a 1/4" drill value like this. Although the new Model 134 is up to 40% more powerful than other drills in its price range, its light weight and new pistol-grip design make it easier to handle! Speeds through tough, hard-to-reach metal or wood drilling assignments ... steps up production in maintenance, on the assembly line, or in the shop.

New revolutionary *dura-plastic* finish gives sure grip, resists wear. Quality SKIL features assure long life under rugged use. Put the new SKIL Model 134 on your production or maintenance team at the low price of only \$34.50! See it, try it today!

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- **New dura-plastic finish** for easier, more positive grip.
- **Quality geared chuck** for fast, accurate bit changing.
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**New Skil 1/4" Drill, Model 134  
At Only \$34.50!**

- **Standard speed—1800 r.p.m.**
- **Capacity in steel, 1/4"; in wood, 1/2"**
- **Net weight, only 3 1/4 lbs.!**



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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# industry

## developments

**Detrex Corp., Detroit**, who will purchase Hooker-Detrax, Inc., and soon to be known as Detrex Chemical Industries, Inc., has entered into an agreement to manufacture and merchandise all package-type conveyors, plus other items, owned and previously manufactured by B & G Machinery Co., Indianapolis.

**Mack Trucks, Inc., New York**, has merged several of its wholly-owned subsidiaries under the parent name. Affiliates merged were; Brunswick Ordnance Corp.,

Mack Mfg. Corp., Mack Motor Truck Corp., Mack Brothers Motor Car Co., and International Plainfield Motor Co. Two other Mack subsidiaries, Mack Trucks of Canada, Ltd., and Mack Electronics Division, Inc., retain their present identities.

A \$113,000,000 expansion of the Fontana, Calif., steel mill of **Kaiser Steel Corp., Los Angeles**, is now underway. The expansion is expected to increase the production of steel ingots and finished steel by 40%. Major units

to be installed include an oxygen steelmaking process plant for steel ingots, a slabbing mill for initial rolling of ingots, and various changes and additions to increase the output in the hot strip mill, plate mill, and tin mill. Construction is expected to be completed in about two years.

**Electro Metallurgical Co.**, division of Union Carbide and Carbon Corp., New York, is expanding the production of aluminum-vanadium addition alloys that will improve the high-temperature properties of titanium.

**The Lincoln Engineering Co.**, St. Louis, and **The McNeil Machine & Engineering Co.**, Akron, O., have merged. McNeil is the surviving corporation, with Lincoln becoming a division.

The world's fastest rod rolling machinery is going through a "shake-down" at the Cuyahoga works of **American Steel & Wire Division, United States Steel Corp., Cleveland**. Four lines of rods are produced simultaneously on what is known as American's No. 1 Rod Mill. Before the end of the year, the mill will reach its annual capacity rate of production of 450,000 tons. The new facility includes the combination rod mill, billet storage area and rod storage area.

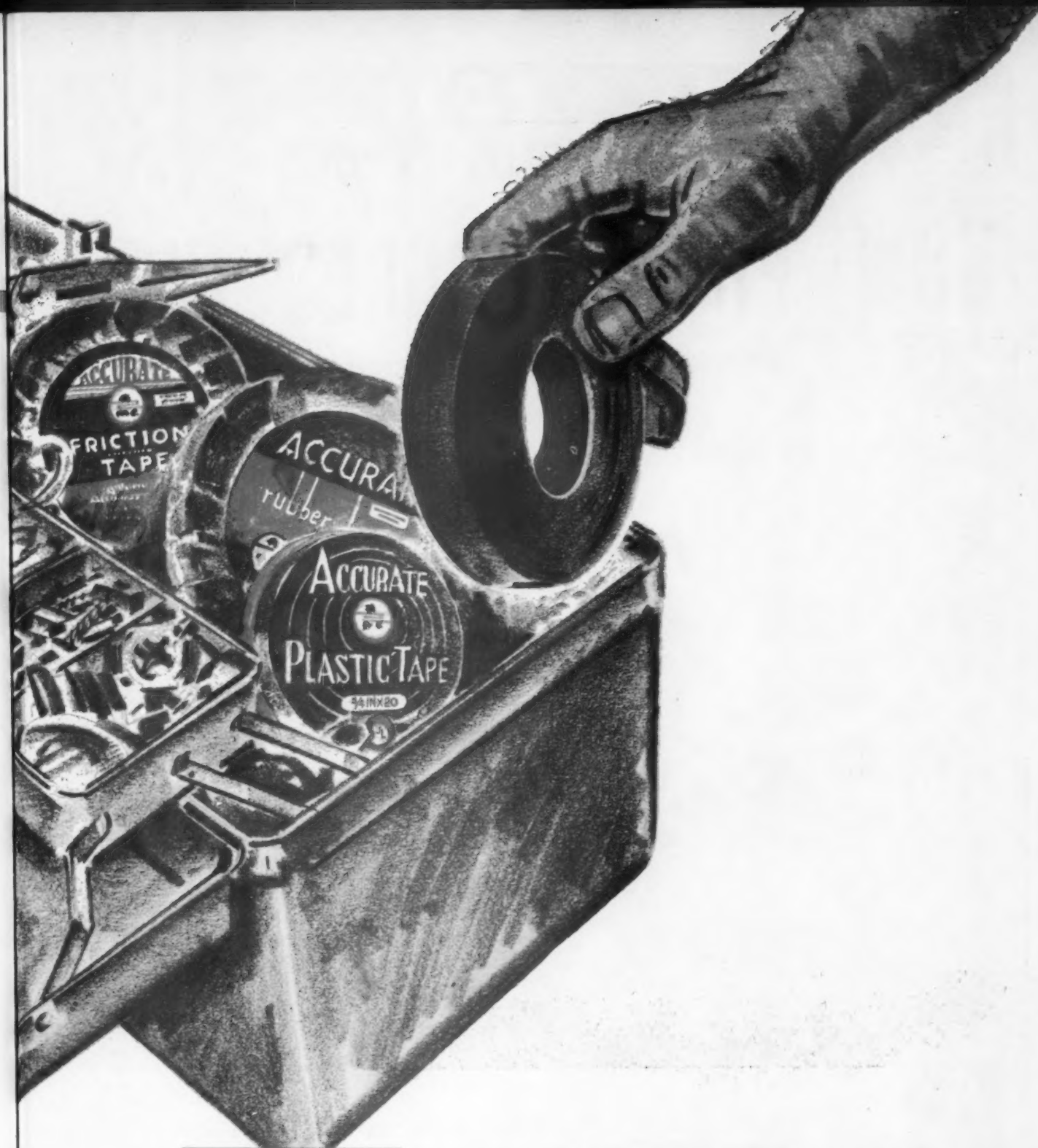
For More Information Circle No. 321  
on Inquiry Card—Page 17→

PURCHASING



**A NEW 16-INCH SENDZIMIR COLD-ROLLING MILL** has been placed in full-scale operation at the Forestville, Conn., plant of the Wallace Barnes Steel Division, Associated Spring Corp., Bristol, Conn. It is capable of rolling strip steel up to 13 inches wide, and increases the steel division's steel-rolling capacity by 50%.





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# Progressive News



VOL. 275 NO. 12

TORRINGTON, CONNECTICUT

12 PAGES COPY 25 CENTS

## NOW! FROM PROGRESSIVE

### Customized Slotted Tapping Screws

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Fuss Pythian

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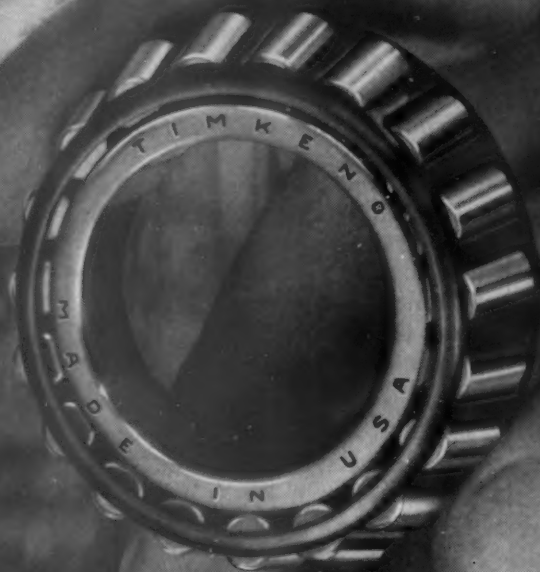
Now you can get from PROGRESSIVE Slotted Tapping Screws with an extra customized touch — Slotted Tapping Screws which are custom-made to your order. This means: (1) specifically made for you — not bin stock parts; (2) fast, custom-handling of every order; plus (3) the double economy of low initial cost and the savings in your assembly operations possible only with high precision, torsion-tested fasteners.

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**New TIMKEN® Moto-Mated bearings  
cost up to 11.3%  
less than previous designs**

**M**ACHINES are behind the mushrooming expansion of America's industry. Big machines. Small machines. Machines that grind, cut, roll. Conveyors and machine tools. Lift trucks and automobiles. Machines that go faster with more accuracy.

To meet this big change in industry, the Timken Company has launched a whole new concept in bearing design, manufacture and supply... *mated* to the growing needs of *your* industry, wherever wheels and shafts turn. It's the *Moto-Mated Way*!

Timken® Moto-Mated bearings are made possible by a revolutionary continuous production factory. Smaller bearings for more compact designs...

lighter bearings to reduce weight... more precise bearings to give you a new high in quality... lower priced bearings to offset your spiraling costs. And they're being produced in almost unlimited supply!

The auto industry has saved 11.3% or more in bearing cost for millions of front wheels by adopting new Timken Moto-Mated bearings. They're available now in bore sizes of  $\frac{3}{4}$ ",  $\frac{27}{32}$ ",  $1\frac{1}{4}$ ", and  $1\frac{3}{4}$ ". By redesigning present applications for the new Timken Moto-Mated bearings, you can save up to 11.3%. And as your use of the new standardized sizes grows, we can pass along our manufacturer's savings.

New Timken Moto-Mated bearings open new possibilities for engineering improvements as well as greater production efficiency. Like the car makers, you'll find economies in related parts, too.

Quality, service, public acceptance, and the new low price make Timken bearings your No. 1 value. There's no reason to substitute. Our representatives will be glad to tell you more about the Moto-Mated Way. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

YOUR No. 1 BEARING VALUE

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ROLLER  
BEARINGS**





are often attained by using "the one BEST block" for a specific load. MADESCO Blocks correctly designed and engineered for your specific operation may effect savings YOU can benefit from!

Twenty-five years' experience in designing and making blocks for "a-thousand-and-one" different uses means that MADESCO Blocks help speed hoisting, give trouble-free service, help prolong rope life.

Write—today—for bulletins and consult us about your specific needs.

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**MADESCO**  
**BLOCKS**

RAE-M900-2-54

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on Inquiry Card—Page 17  
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## industry

Sterling Die Division, Pratt & Whitney Co., Inc., Cleveland, has moved to its new plant.

30 years of accumulated special knowledge in fusing glass coatings to steel is now available to other industrial companies through a new program of A. O. Smith Corp., Milwaukee. Smith will aid other corporations in solving corrosion and other problems through glass coating. Where feasible, Smith will use its furnace facilities in Milwaukee, at its Permaglas Division in Kankakee, Ill., and at its Glascote Products subsidiary in Cleveland.

To make room for growing production of the newly introduced International, heavy-duty, truck V-8 engines at its Indianapolis engine plant, International Harvester Co., Chicago, has moved the building of three 6-cylinder Black Diamond truck engines to the company's Louisville works.

Federal-Mogul-Bower Bearings, Inc., Detroit, and National Motor Bearing Co., Inc., Redwood City, Calif., have announced plans to merge. National would be operated as a division of Federal-Mogul-Bower.

Brainard Steel Division, Sharon Steel Corp., Warren, O., has opened new warehouse facilities in Boston to serve the New England area.

The Midvale-Heppenstall Co., Philadelphia, and Allegheny Ludlum Steel Corp., Pittsburgh, have completed an agreement for the sale, by Allegheny, of technical knowledge and patent rights for the production of consumable electrode vacuum remelting of steel and ferrous group base alloys.

## Finding the ROTTEN APPLE in the BARREL



*William O. Dunn*

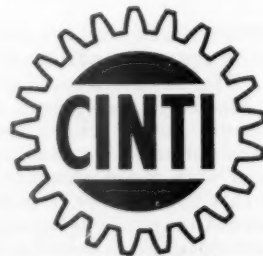
CHIEF INSPECTOR, THE CINCINNATI GEAR CO.

Several years ago we ran an ad entitled "Ears for Gears" that produced a lot of comment. The unusual title was explained in the copy, in which we told how we can individually *sound check* gears for minimum noise level. This checking is done on ultra-modern testing equipment, under specified load and R.P.M., measuring the decibel tolerances of the individual gears. Not only does this help us produce silent-running gears, but it is also one example of the extensive checking and testing to which we subject our gears, to be *sure* of maintaining our reputation for delivering only *good* gears.

This checking and testing, which is the responsibility of my department, is one of the most important functions in our plant. It's always *possible* for a "rotten apple" to slip into the barrel, but it's *essential* that it be found and removed before shipping. That's why my department can't afford to make any mistakes, or compromise in any way. Top management realizes this; they provide us with the best available equipment, and I report directly to our President (eliminating any possibility of "shop influences" in our testing standards). As a result, our customers have the assurance that when they send us an order they'll receive only the best custom gears obtainable.

THE CINCINNATI GEAR CO.  
CINCINNATI 27, OHIO

"Gears—Good Gears Only"



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on Inquiry Card—Page 17  
PURCHASING

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Roebbling Control and Signal Cable is available in a variety of standard constructions, but we are always ready to meet individual specifications required for specific conditions. This cable may be obtained with *Roeplastic* or *Roeprene* sheath. Individual conductors are identified by clear, indelible printing which continuously repeats both the IPCEA code color name and the individual conductor number.

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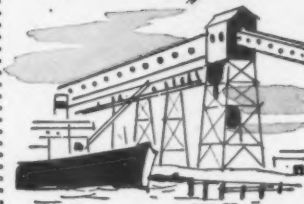
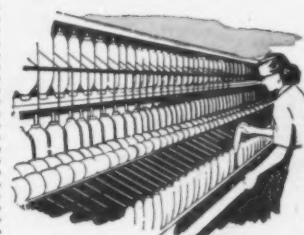
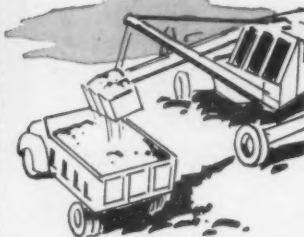
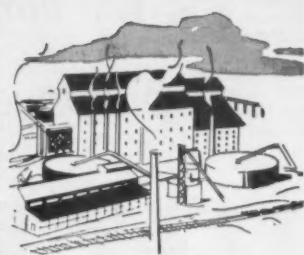
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Through continuing engineering research and advanced quality control measures, SEALMASTER Ball Bearing Units are the finest skilled hands and modern manufacturing processes can produce.
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SEALMASTER Ball Bearing Units are available in a complete line of standard and special units to meet every bearing unit requirement.
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- 4 MORE FOR THE MONEY**  
SEALMASTER Ball Bearing Units with their exclusive combination of features give you dollar dividends in "on the job" performance.
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Engineering service is available when you need it. Working with SEALMASTER is like adding an engineering consultant to your staff at no extra cost.



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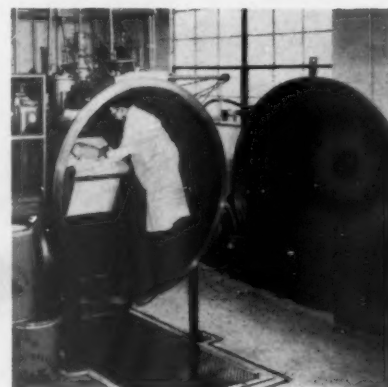


Write for Bulletin  
containing full  
information on  
**SEALMASTER**  
Ball Bearing  
Units.



industry

A new plant is being built in the Gainesville, Fla., area by the **General Electric Co., Syracuse, N. Y.** The plant, with more than 300,000 sq. ft. of space, will cost more than \$4,000,000 and will be part of GE's Communication Equipment Section.



A new vacuum-melting furnace and new metallurgical-chemical analysis equipment have been added to expanded facilities available to the metalworking industry for alloy experimental and production work by **Cannon-Muskegon Corp., Muskegon, Mich.**

**Square D Co., Detroit,** is building an electrical assembly plant in Atlanta as the base of expanded operations in southeastern United States.

**Central Sales & Mfg. Corp., Denville, N. J.,** has been acquired by **Nuclear Corp. of America, Inc., New York.** It will now be known as **Central Electronic Manufacturers, Inc.,** and will operate as a wholly-owned subsidiary.

**United States Plywood Corp., New York,** has consolidated its Weldwood Chalkboard operation with the Flexible Materials Division and centered all activities in the headquarters of the latter group in Louisville, Ky.





## surest thing in measuring—

There's never an argument when it comes to precision measuring tools. Just specify STARRETT and you'll please everyone in the shop—from the tool crib supervisor to the rawest apprentice.

But why stop with measuring tools when there are so many opportunities to get the same quality and dependability in so many other Starrett products? Did you know, for example, that Starrett makes the world's most complete line of dial indicators and

dial gages? Or that Starrett is among the largest producers of hacksaws, hole saws, band saws and band knives? Or that Starrett makes precision ground die and flat stock in over 1000 sizes?

Your Industrial Supply Distributor stocks the complete Starrett line. He can give you prompt, dependable service to match the quality and dependability of Starrett products. It pays in so many ways to specify *Starrett*.

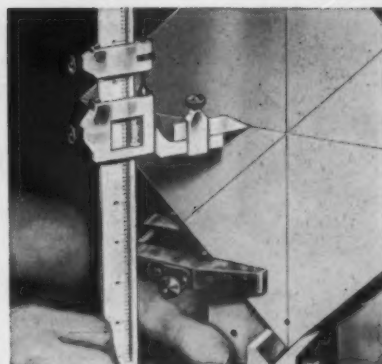
### NEW CATALOG No. 27

Shows the complete Starrett line. Ask your Industrial Supply Distributor or write for free copy. Address Dept. P, The L. S. Starrett Company, Athol, Massachusetts, U. S. A.



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WORLD'S GREATEST TOOLMAKERS

MECHANICS' HAND MEASURING TOOLS AND PRECISION INSTRUMENTS  
DIAL INDICATORS • STEEL TAPES • PRECISION GROUND FLAT STOCK  
HACKSAWS • HOLE SAWS • BAND SAWS • BAND KNIVES



### HAND MEASURING TOOLS AND PRECISION INSTRUMENTS

The name Starrett on a tool guarantees accuracy, fine workmanship and complete dependability.



### DIAL INDICATORS AND GAGES

Standard for quality and dependability—a complete line for every gaging or production inspection application.



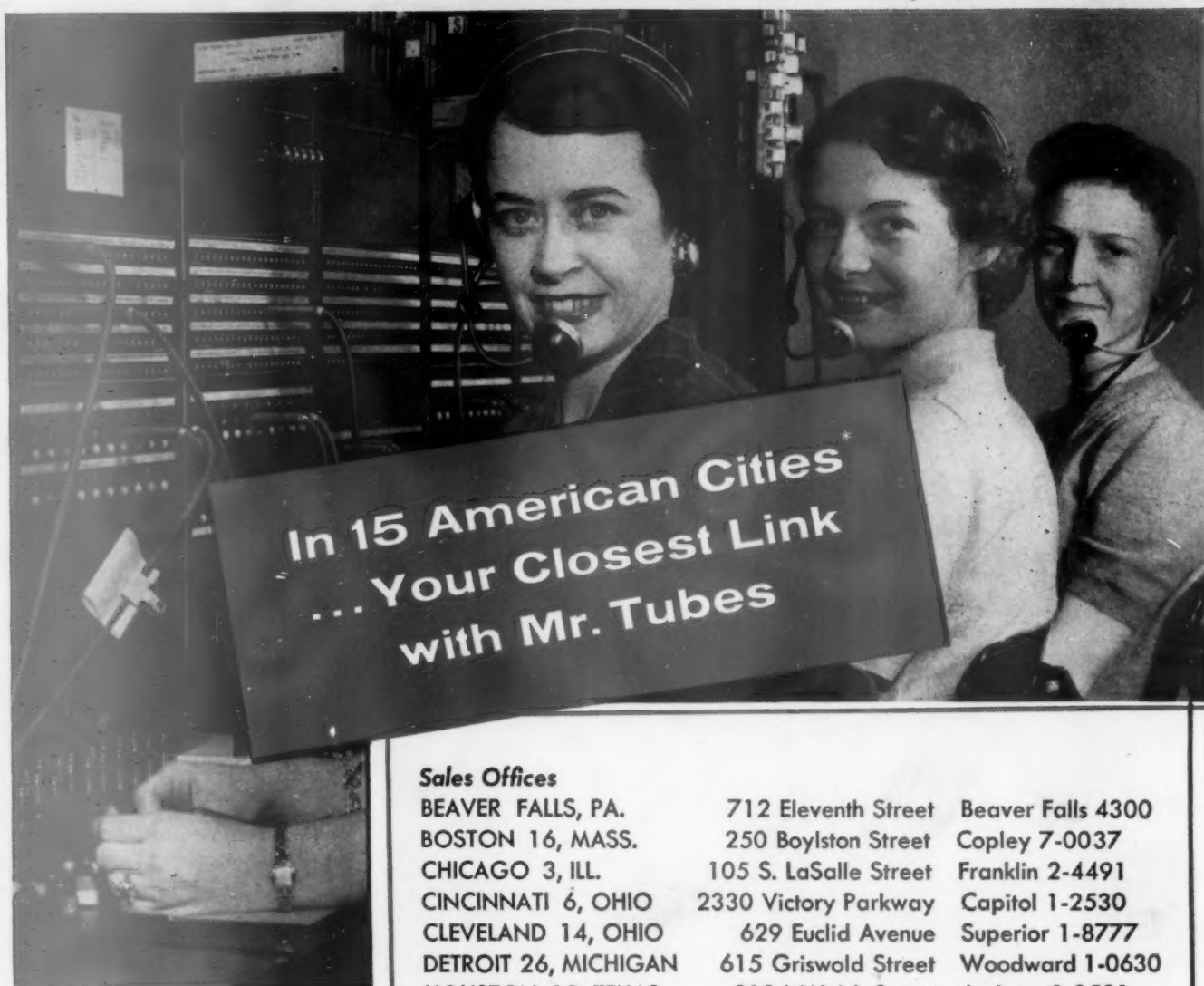
### HACKSAWS, BAND SAWS, BAND KNIVES

Precision made and production proved for top performance, uniformity and maximum cutting economy.



### PRECISION GROUND DIE STOCK AND FLAT STOCK

Now over 1000 sizes—air, oil, oil and water and water hardening types. "Just lay it out and saw it out."



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Whatever your questions about, or problems with carbon, alloy or stainless tubing, seamless or welded, the fastest way to get experienced help is to call for it. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.



*\*Wherever you are, you're within calling distance*

TA-6049 (G)

Seamless and welded tubular products, seamless welding fittings and flanges—in carbon, alloy and stainless steels  
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DOW CORNING  
CORPORATION

# Silicone News

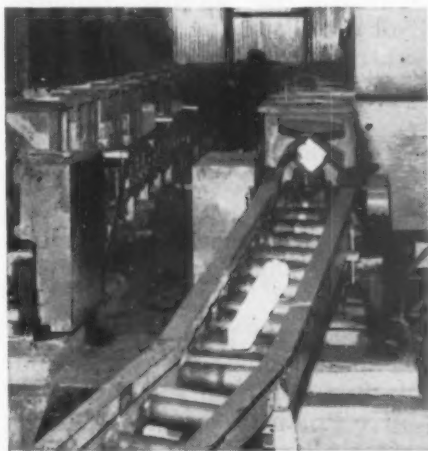
FOR DESIGN ENGINEERS

## SILICONE INSULATED COILS UP ROLLING MILL PRODUCTION 30%

By using coils insulated with Dow Corning Silicones in their induction heating furnaces, Vancouver Rolling Mills of Canada has cut steel ingot heating time 75%; reduced fuel costs \$200 per day. And even more important to a steel-hungry economy, production has been increased 30%.

Designed and constructed by General Engineering Ltd., Toronto, this is the largest induction heating installation in the world. Indications are that the design techniques including the silicone insulated coils may well revolutionize the reheating of steel ingots or billets wherever electric power is in good supply.

Two coil "tunnels" are divided into two stages. In the first stage almost half of the required 7000 KW is applied at 60 cycles, heating cold ingots to 1400 F. The second stage, at 540 cycles, brings ingot temperature up to 2300 F. To demonstrate the efficiency of the system, a cold ingot can become bar stock within 10 minutes after entering the furnace. Rated production is 20 tons an hour.



Insulated with Dow Corning Silicones, the coils are frequently within inches of the white-hot ingots. On occasions when sections of the refractory material serving as thermal insulation have been broken away, the silicone insulation has been exposed to greatly elevated temperatures without failure. The unit has been in operation since July, 1954. No. 95

## Seal And Spring In Toroidal Inductor Made From Silastic

Superior resistance to compression set, even after prolonged exposure to high or low temperatures, has made Silastic\*, Dow Corning's silicone rubber, increasingly popular among designers once hampered by the temperature limitations of organic rubber. Here, for example, is how Burnell & Co., Inc., uses Silastic to make a new variable toroidal inductor more efficient and dependable at temperatures ranging from -100 to over 500 F.

The "Rotoroid" inductor comprises a toroid coil and two permanent magnets. One of the magnets is rotatable to produce a continuously adjustable biasing field for electronic circuitry. To provide a positive seal where the controlling shaft enters the unit's hermetically sealed housing, the shaft is fitted with a "Hexseal" locknut that has a heavy Silastic cover, molded by APM Co.

## Speed And Range of Vacuum Pump Increased With Silicone Fluid

A series of tests conducted by the F. J. Stokes Machine Company, Philadelphia, world's largest producer of high vacuum equipment, prove that Dow Corning 702 Diffusion Pump Fluid helps to attain higher vacuum in less time than possible with organic fluids.

The silicone fluid provides faster evacuation in the 1 to 10 micron range and at the same time assures lower ultimate pressures in the range between .01 and .001 microns.

The tests were performed in connection with development of Stokes' new line of Ring-Jet Diffusion Pump Series 160, and Ring-Jet Booster Pumps Series 150. Remarkably effective for rapid-cycle work, these pumps are available in 5 sizes from 4 to 16 inches.

The test results, since confirmed by experience in other Ring-Jet Pump models, have led Stokes to advise its representatives "since the organic fluid is almost the same in price as the silicone, the silicone fluid (Dow Corning 702) would be preferable, especially considering that it will not oxidize when subjected to the atmosphere at high temperatures." No. 96

To permit the shaft to turn freely, and yet maintain a tight seal, a very small amount of Dow Corning 200 Fluid, 1,000,000 centistokes, is applied to the well of the locknut.

Silastic also serves as a thrust and centering spring inside the "Rotoroid." Here a



high durometer Silastic is used. In service this silicone rubber spring has proved to have excellent service life, retaining its original resiliency over a much wider temperature span than any metal spring.

In many electronic applications, such as guided missile telemetering systems, the thermal stability made possible through the use of Silastic parts, is vital to the "Rotoroid's" accurate performance. No. 97

\* T. M. REG. U. S. PAT. OFF.

## Design Edition 23

DOW CORNING CORPORATION - Dept. 8908  
Midland, Michigan

Please send me 95 96 97

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Canada: Dow Corning Silicones Ltd., Toronto; Great Britain: Midland Silicones Ltd., London; France: St. Gobain, Paris

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AUGUST, 1956

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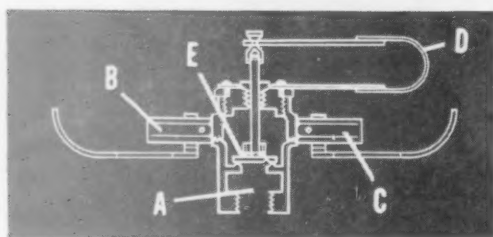


## HOW CHACE THERMOSTATIC BIMETAL ACTUATES THE



A Product of  
EverHot Heater Co.  
Detroit, Mich.

## GAS PILOT



Modern living calls for more hot water—more often—what with frequent bathing, automatic dishwashers, home laundries, etc. But

modern living also demands safety—and the EverHot Deluxe Gas Automatic Water Heater, whose pilot is actuated by Chace Thermostatic Bimetal, provides economy, efficiency *and* safety in good measure.

This device combines the functions of burner and pilot jets. The flow for the burner heat is controlled by the temperature of the water in the tank through the main gas inlet (A). The heat of the gas pilots at (B) and (C) causes the bimetal element (D) to flex upward, raising the valve (E) from the valve seat, and the valve will remain open as long as the pilot lights burn. Should the pilot light be extinguished, the element will cool and the bimetal element will assume its normal position, lowering the valve to its seat and cutting off the main flow of gas.

Chace Thermostatic Bimetal is available in 28 types, in strip, coil or completely fabricated and assembled elements made to your specification. Write for new 44-page booklet, "Successful Applications of Chace Thermostatic Bimetal," containing interesting uses of bimetal, formulas, calculations, etc.



**W. M. CHACE CO.**  
Thermostatic Bimetal  
1635 BEARD AVE., DETROIT 9, MICH.

For More Information Circle No. 330 on Inquiry Card—Page 17

## industry

A million-dollar office building is now being built by **Fischer & Porter Co., Hatboro, Pa.** The 91,000 sq.ft., completely air-conditioned building, will release a corresponding amount of floor space in the plant, permitting expansion and more efficient layout of all manufacturing facilities.

**Pittsburgh Coke & Chemical Co.** has formed a new, wholly-owned subsidiary called **Neville Ferro Alloy Co.** Neville will produce and market ferro-manganese and other ferro alloys to the steel industry. Production of the new company will start later this year.

**Vanadium Corp. of America, New York,** has announced plans to build a modern plant for the production of ferro alloys near New Alexandria, Ohio. It will be designed, primarily, for the production of ferrochromium alloys, although its electric furnaces will permit production of various other ferro alloys used in the steel and aluminum industries.

**Reading Batteries, Inc., Reading, Pa.,** has been purchased by **The Electric Auto-Lite Co., Toledo.** It is now the Reading Batteries Division of Auto-Lite.

A complete pilot line for the chemical milling of steel and titanium has been established at **Turco Products, Inc., Los Angeles,** in a joint research and development effort with **North American Aviation, Inc., Downey, Calif.** The pilot plant will serve as a research center for development of new techniques in the chemical forming of steel and titanium; for the preliminary forming of prototype parts for prospective users of the Chem-Mill process; and to train personnel of sublicensees to the process.



**What  
shape  
is a  
quality  
fastener?**

Here is a handful of ELASTIC STOP® nuts. Each has ESNA's familiar red locking collar . . . is self-locking and vibration-proof. Each is a readily assembled, one-piece unit. Each provides positive protection against thread corrosion . . . prevents liquid seepage along bolts. Each is made from the finest of raw materials. Each is exactly controlled as to finished dimensions, class of thread fit and finish. Each is now in use on critical applications, with a record for uniform high quality that is unmatched.

*Most of them are standard parts. Some originated as the result of a specific request for ESNA's help with an important fastening problem.*

Isn't it logical to call on us with your next fastening problem?

## ELASTIC STOP NUT CORPORATION OF AMERICA



### Elastic Stop Nut Corporation of America

Dept. N62-815, 2330 Vauxhall Road, Union, N. J.

Please send the following free fastening information:

☐ ELASTIC STOP nut bulletin

☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

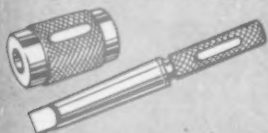
# Shortest Route to Quality Control is via **PRATT & WHITNEY**



## THREAD GAGES

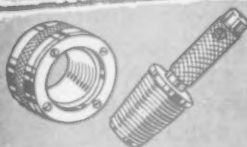


### Cylindrical GAGES



### TAPER GAGES

### ROLL THREAD SNAP GAGES Adjustable Limit Snap Gages



### Oil Country GAGES



### RAILROAD GAGES



### PRECISION END MEASURES



### Precision GAGE BLOCKS

## shortest route . . .

because Pratt & Whitney manufactures *complete* lines of conventional hand gages. You can select — from just one source — *all* the types and models you need to establish efficient quality control methods in your plant. A few of the many available are shown here.

## surest route . . .

because into every Pratt & Whitney Gage is built an unmatched quality and accuracy that insures higher standards of precision maintained with complete dependability.

## start off now

on the right foot — write now for descriptive literature on the P&W Gage types you need. And if you want expert help in selecting the best gages for your specific requirements, call in a Pratt & Whitney Gage Specialist . . . there's one conveniently located in your area.



**PRATT & WHITNEY COMPANY**  
INCORPORATED

19 Charter Oak Boulevard, West Hartford 1, Connecticut  
Branch Offices and Stocks in Principal Cities  
MACHINE TOOLS • GAGES • CUTTING TOOLS

## suppliers

Gordon F. Colson has been appointed a field engineer at the Huntington Park, Calif., office of Norton Co., Worcester, Mass.

Alexander D. Lumsden has been made manager of foam slab product sales by Hewitt-Robins Inc., Stamford, Conn.

The Brewer-Titchener Corp., Cortland, N. Y., has named the William Robinson Co., Inc., as a representative for BTC marine and industrial hardware. Robinson will cover New York, New Jersey, Maryland, Delaware, District of Columbia and eastern Pennsylvania.

Robert N. Nanninga has joined the Fansteel Metallurgical Corp., North Chicago, Ill., as west coast sales engineer for the Electrical Contact Division. He will cover Arizona and southern California.

Two new Louisiana dealers have been appointed to handle the Michigan line of the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. The E. C. Ray Machinery Co., Shreveport, will sell and service tractor shovels and excavator cranes. General Equipment, Inc., Baton Rouge, will sell and service tractor shovels and excavator crane parts only.

Charles R. Anderson has been named a factory representative covering Oklahoma and Texas for the Gen-A-Matic Corp., Van Nuys, Calif.

The appointment of the Asbestos and Insulating Co. as contractor-applicator of Fiberglas acoustical products has been announced by Owens-Corning Fiber-glas Corp., Toledo. The territory covered includes part of West Virginia, eastern Ohio and northeastern Kentucky.

For More Information Circle No. 379  
—on Inquiry Card—Page 17



# New Lightweight Single-Bearing Redmond Motor Warranted Two Years for Customer Satisfaction

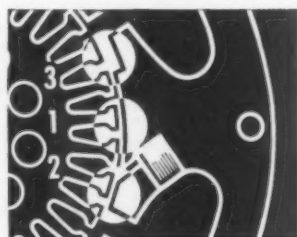
## HOW TRI-FLUX DESIGN IMPROVES PERFORMANCE BY ADDING A 3rd AREA OF MAGNETIC FLUX



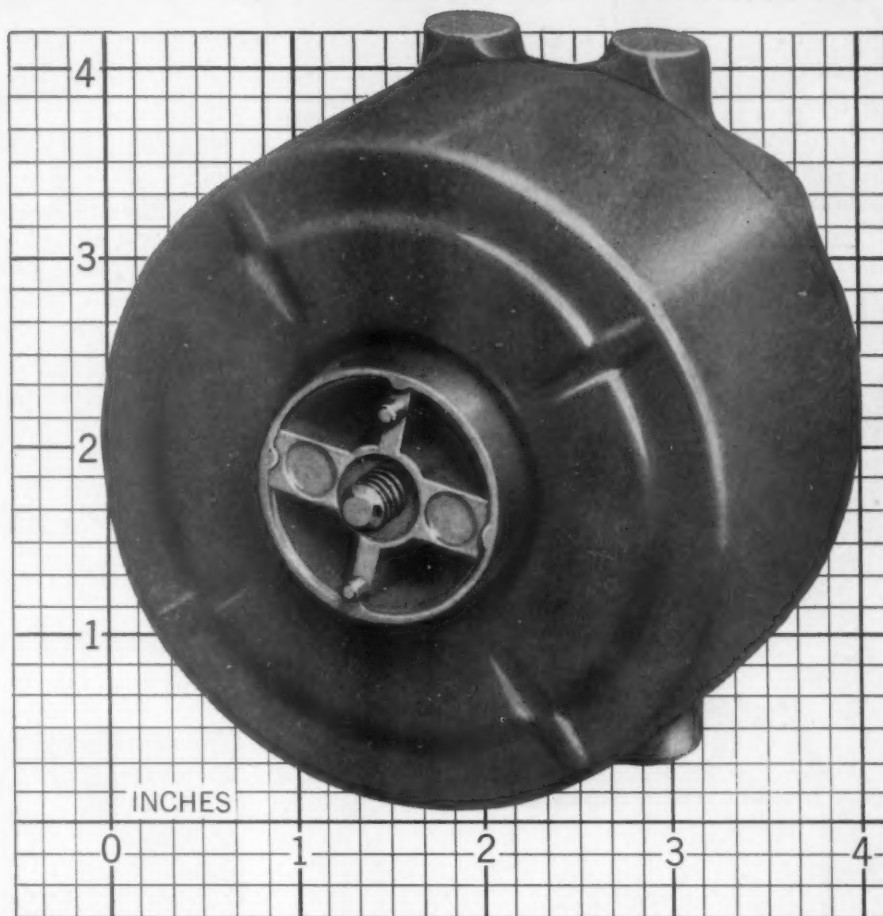
The salient pole single phase induction motor has only one flux path—indicated by the white circle—between the field and the rotor. The motor is not self-starting—for commercial value a starting mechanism must be added.



The second white circle indicates the flux path added by wrapping a shading coil around the trailing pole tip. Power and uni-directional action are increased in this shaded pole induction motor, and it is now self-starting. This motor is now practical at low cost, and is used for applications requiring limited starting torque.



Note that a third flux path has been added at the leading pole tip. This was accomplished by Redmond's Tri-Flux design, whereby a "reluctance notch," which can be seen in the third white circle, is put in the leading pole tip. Efficiency and starting and running torques are greatly increased. New applications are opened to these improved, low-cost motors.



## Designed Specifically for the Refrigeration and Air Conditioning Industries and Adaptable for a Wide Variety of Applications

The Redmond AM-4 single-bearing Monomotor is ideal for applications where a long life, quality motor is required. Built to give outstanding performance over years of continuous service-free use, this assurance of customer satisfaction is backed by Redmond's full two-year warranty.

Outstanding features of the new AM-4 are all-angle operation and interchangeability to accommodate all standard brackets and special mounts. Made of a durable lightweight metal, this new single-bearing motor is considerably lighter than conventional models. A new positive oil system is used that is guaranteed not to leak oil in use or in shipment. The extra large oil reservoir is permanently sealed for lifetime lubrication.

Among the many features of the new AM-4 are two that are available only in Redmond small-diameter motors. They are: 1) Patented Tri-Flux design, described in the column to the left, which increases the efficiency and starting and running torques of the AM-4 over conventional single-bearing motors. 2) Uni-Cast construction, which assures a rugged, yet smooth, quiet motor as the stator core frame is precision die cast in one piece, enabling extremely close

tolerances to be maintained during manufacture.

Rated at  $1\frac{1}{2}$  through 16 watts, the AM-4 MonoMotor is of 4-pole design, 1550 r.p.m., 115 volts, 60 cycles, and is also available in odd voltages and frequencies.

### Descriptive Brochure Available

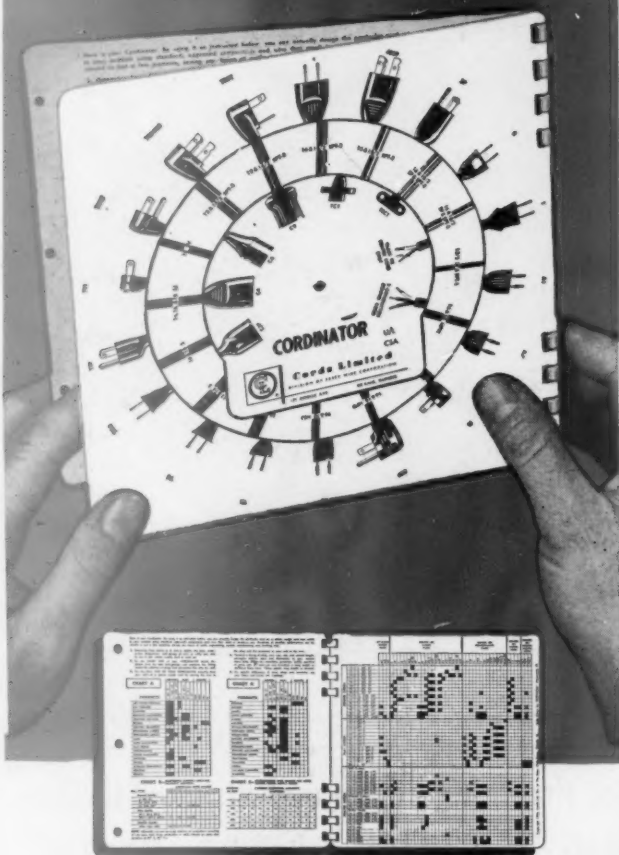


For the complete story on the new AM-4 motor—dimensions, performance, operational data, and suggested applications—write the Redmond Co., Owosso, Michigan for the "AM-4 Bulletin."

**NOW!**

**DESIGN NEW CORD SETS  
and  
POWER SUPPLY CORDS  
with a**

**Cordinator®**



**T**HIS new tool for purchasing agents and designers permits actual visual fabrication of hundreds of cord sets and power supply cords... at your desk... in a few short moments.

Simplified charts give quick selection of approved wire for your specific product... and all Cords, Ltd. types of standard plugs and connectors that are best adapted to it. The dial side of the Cordinator then permits visual construction of the Cord Set you have selected.

All wire, plugs and connectors are standard approved components which minimize costs... assure you scheduled delivery!

**For your Cordinator...**

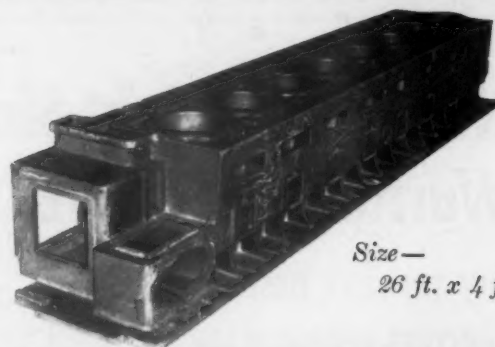
send request today on your company letterhead.



**CORDS LIMITED**

DIVISION ESSEX WIRE CORPORATION  
121 DODGE STREET, DEKALB, ILLINOIS

For More Information Circle No. 333 on Inquiry Card—Page 17  
264



Size—  
26 ft. x 4 ft.

**PRECISION  
GRAY IRON • ALLOY IRON • DUCTILE IRON  
CASTINGS**

**CEMENT BONDED SAND METHOD**

**CHAMBERSBURG  
ENGINEERING COMPANY**

*"THE HAMMER BUILDERS"*

561 Derbyshire Street

Chambersburg, Penna.

For More Information Circle No. 370 on Inquiry Card—Page 17

**TINY  
Sample or**



**GIANT Economy size**

You can package it better  
at less cost in a **Clearsite** plastic jar or vial

- 1/5 the weight of glass
- Shatter-proof
- Easy to print
- Moisture tight, dust free

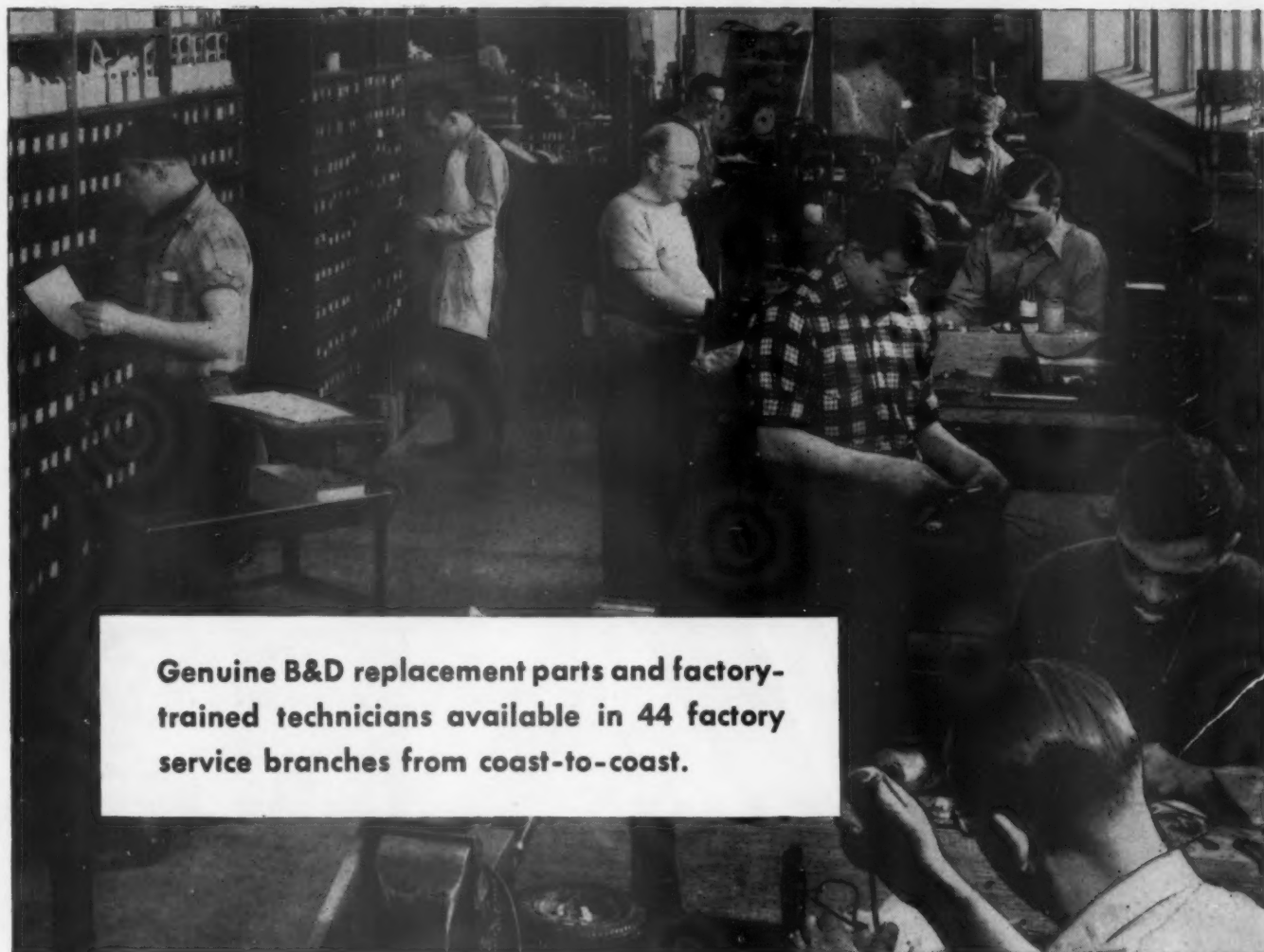
There is a wide variety of shapes, sizes, colors and closures available to give your particular product extra sales sparkle. Write for free samples and descriptive literature to Dept. L.

**CELLUPLASTIC CORPORATION**

Sales and Executive Offices Newark, New Jersey

For More Information Circle No. 334 on Inquiry Card—Page 17  
PURCHASING

# Black & Decker **next door** factory branches provide fast, expert service!



**Genuine B&D replacement parts and factory-trained technicians available in 44 factory service branches from coast-to-coast.**

An important factor in the purchase of any electric tool is the service facilities which you may have to depend upon later (even the finest tool may eventually require reconditioning after long use.)

With Black & Decker you save your firm time and money by eliminating costly "downtime." Why? Because our responsibility to you never ends with the purchase, and that's why we own and operate 44 factory service branches . . . geared to provide swift, skillful servicing by

factory-trained technicians using only genuine Black & Decker replacement parts.

Each branch is an integral part of the world's largest facilities devoted exclusively to portable electric tools . . . assuring you of the highest quality in parts and servicing. Your tools go back to work . . . without cost-consuming delay . . . because one of the 44 branches is located "next door" to you wherever you are. **THE BLACK & DECKER MFG. Co., Dept. 1708, Towson 4, Maryland.**

Look in the Yellow Pages under "Tools-Electric" for Nearest Distributor



## **Black & Decker®**

**PORTABLE ELECTRIC TOOLS**



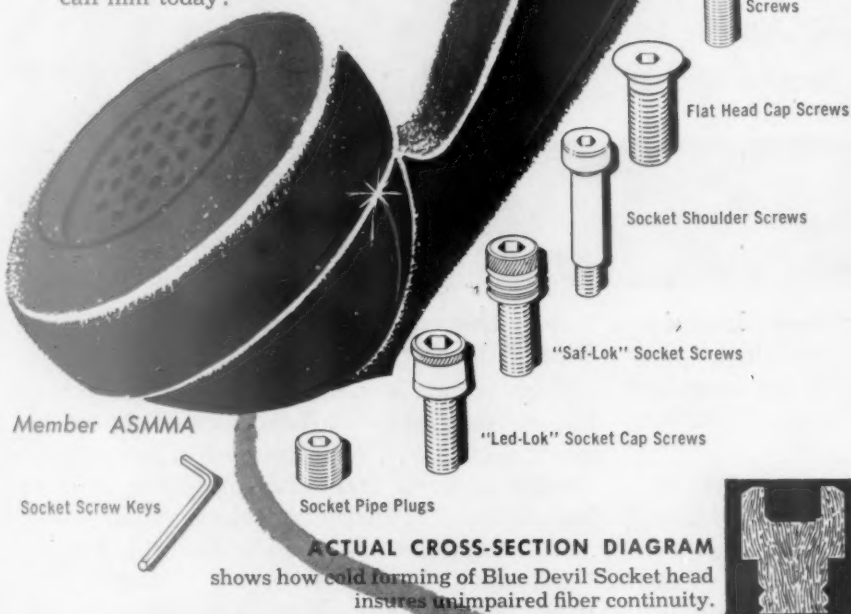


just one call  
...that's all!

**Blue Devil**

## Socket Screw Products

One call does it all . . . because your Blue Devil Distributor has a complete line of socket screw products. His large stock plus that of Blue Devil's factory and warehouse stocks means all your regular and emergency needs can be quickly filled. Why not call him today?



Member ASMA

Socket Screw Keys

Socket Pipe Plugs

**ACTUAL CROSS-SECTION DIAGRAM**  
shows how cold forming of Blue Devil Socket head  
insures unimpaired fiber continuity.

Sold Only Through Authorized Industrial Distributors

# SAFETY SOCKET SCREW COMPANY

6502 North Avondale Avenue • Chicago 31, Illinois  
Warehouses at: Los Angeles • San Francisco • Detroit • New Haven, Conn.

*Socket Screws Exclusively!*

For More Information Circle No. 336 on Inquiry Card—Page 17

suppliers

DeWalt Inc., Lancaster, Pa., producer of homeshop and industrial woodworking equipment, has appointed new district sales man-



R. C. Stevens



V. Marino



R. K. Stevens

agers to the company's New York City, Connecticut and New England territories. They are: Vincent Marino, New England; Ross C. Stevens, New York City; and Robert K. Stevens, Connecticut.

William B. Knoderer is now sales manager of the Industrial Division, and Niel Martin Fishback sales manager of the Mining and Contracting Division of Gardner-Denver Co., Quincy, Ill.

Burk Kraleman has been named general manager of sales for the central division of National Can Corp., Chicago. He will be responsible for all sales in the territory extending from the Ohio-Pennsylvania state line to the Rocky Mountains.



## Send for Free 3-D Booklet on Forgings by CHASE®!

CHASE BRASS & COPPER CO., Dep't. Pur. 856  
Waterbury Manufacturing Company Division  
236 McNamara Street, Waterbury 20, Conn.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



PLEASE SEND ME YOUR  
THREE-DIMENSIONAL BOOK-  
LET ON NON-FERROUS FORG-

INGS, COMPLETE WITH VIEWING GLASSES.  
I want to see for myself how forgings by  
Chase can give me economical parts that  
have higher tensile strength, smoother  
surfaces and require less machining and  
finishing.

Not just  
**FINE FORGINGS...**  
but a complete  
forgings service from  
**CHASE®**

### CHOOSE YOUR METAL...TO YOUR SPECIFICATIONS...AND FINISH

- Brass
- Bronze
- Copper
- Aluminum
- Titanium

- Solid blank forgings
- Cored blank forgings
- Machined forgings

- Clean
- Polished
- Polished & Plated

# Chase



BRASS & COPPER CO.

WATERBURY MANUFACTURING CO., DIV.  
SUBSIDIARY OF KENNECOTT COPPER CORPORATION • WATERBURY 20, CONNECTICUT

AUGUST, 1956

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## Bringing the Buyer to the Source

(Continued from page 73)

the equipment and process have been pretested on the particular part under actual working conditions. Table II shows how closely these predictions can be made in advance.

### A Forward Step

The great effectiveness of the combination test laboratory and pilot plant is due to the atmosphere of unbiased engineering and technical observation of equipment operating in near-actual production and service conditions. Further advantage is obtained for the parent equipment manufacturer because of the atmosphere of extremely close cooperation in which the sales engineer, design engineer and production department can operate. This is an ideal situation for customers using such equipment. It also provides the facilities and knowhow necessary for the overall advancement of heat treat technology through basic research

in metallurgy and atmospheres.

This test lab-pilot plant facility is a new sales tool rapidly coming to the fore in the metalworking industry. Its impact is being felt and its value proven beyond a doubt.

## Cable Trough Support

(Continued from page 87)

experienced any trouble in several hundred installations and have not had to require bonding across section joints. This would indicate that the electrical properties of each type of system are approximately equal.

There are some conditions under which trough cannot be used. In highly explosive atmospheres, completely protected systems are required. There are a few other special situations as well. However, cable trough is entirely suitable for utilities and for most industrial applications.

### Advantages in Use

One big advantage of trough for some installations is its adapt-

ability to later modernization and expansion. There are few installations where one can be certain that there never will be a new circuit needed or a change made in existing equipment requiring new cable. Addition of a new circuit, or several new circuits, is a simple matter with trough, as the new cable is added in existing trough, whereas it is not good practice to pull new cable through conduit in excess of 40% of the cross-sectional area. The alternative is to run more conduit, and this is always costly even if possible.

The cables themselves are treated better in trough than in conduit since they are generally laid instead of pulled. They are readily accessible for inspection, repair, rerouting, and replacement. There is generally a higher salvage value to cables in trough.

It is true that trough will not localize trouble, as in the case of fire. On the other hand, a major fire will damage the cables no matter where or how they are installed.

**"We make a straight line to refreshment"**

*In the drafting room, as in the shop, plenty of cool water is essential. That's why we like sanitary Halsey Taylor fixtures."*

You'll find Halsey Taylor Coolers or Fountains unfailingly "on the job" day in and day out. Factory tests predetermine their stamina and sturdy construction. No matter where you install them—in plant or office—you'll be certain of dependability, economy in maintenance, and freedom from servicing annoyances. The Halsey W. Taylor Co., Warren, O.

**HALSEY® TAYLOR**  
Fountains and Coolers

*Industry's Favorite*

F-63

Cooler Shown: Stainless Steel Top




For More Information Circle No. 338 on Inquiry Card—Page 17

**UNIT MACHINING COST CUT 17% ON THIS GRAY IRON CASTING**

...thanks to **FERROCARBO®**

Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they **COST YOU NO MORE**... because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.

**FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 32, Niagara Falls, N. Y. 04-02**

**CARBORUNDUM®**



For More Information Circle No. 339 on Inquiry Card—Page 17

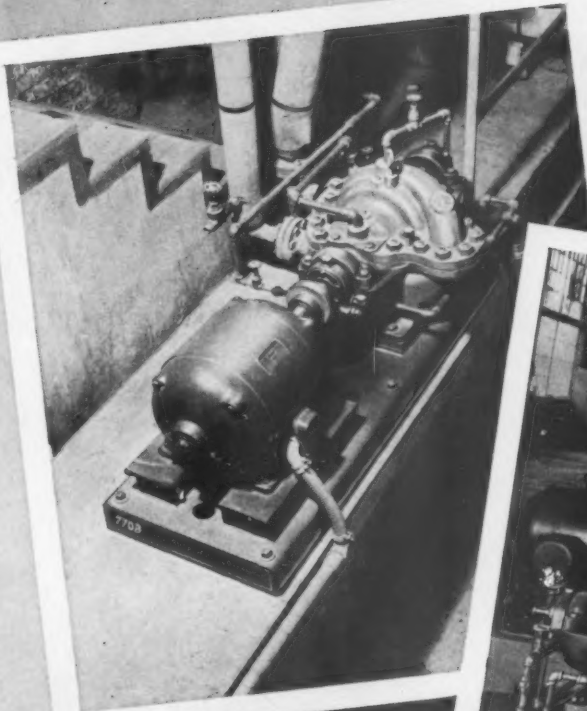
PURCHASING



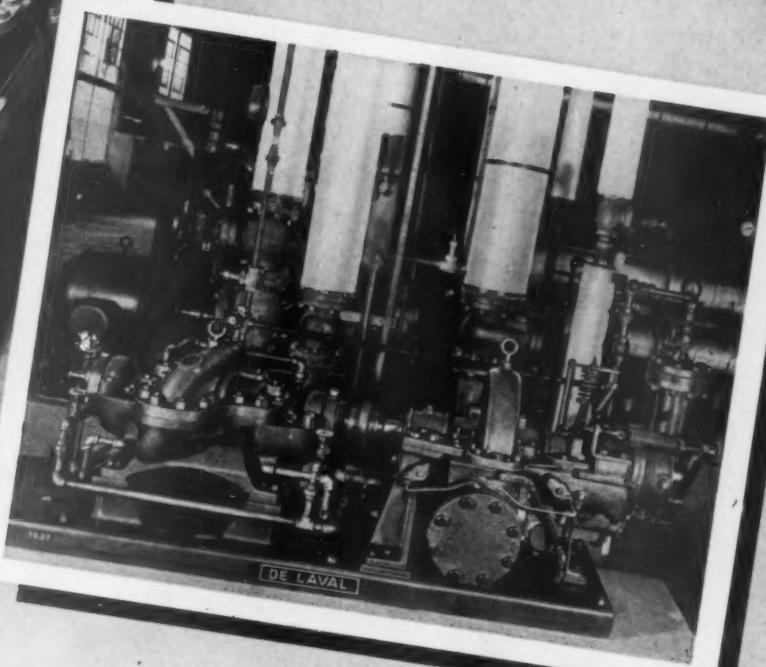
## DE LAVAL

TWO-STAGE  
HORIZONTAL  
PUMPS

*for dependable boiler feed service  
in institutions... industrial plants*



Institutions can't afford shutdowns. In this hospital installation a motor-driven 21S boiler feed pump provides year-in, year-out dependability. It delivers 70 gpm of 240° water at 420 ft. head.



Industrial plants, too, choose reliable De Laval pumps for boiler feed service. This De Laval unit, driven by a De Laval turbine, delivers 160 gpm of 215° water at 520 ft. head.



There are good reasons why De Laval 21S-2KS two-stage horizontal split case pumps give long, economical boiler feed service. They are designed with • back-to-back impellers for balanced hydraulic thrust • easily replaceable threaded impeller wearing rings • long life labyrinth case rings • ring oiled ball bearings — plus ten other important design features.

These De Laval pumps are available in sizes from 2" to 8" discharge, for capacities from 75 to 3,000 gpm and heads to 750 ft.

Write for Bulletin 1501 giving complete data.



**DE LAVAL** *Boiler Feed Pumps*

DE LAVAL STEAM TURBINE COMPANY

807 Nottingham Way, Trenton 2, New Jersey

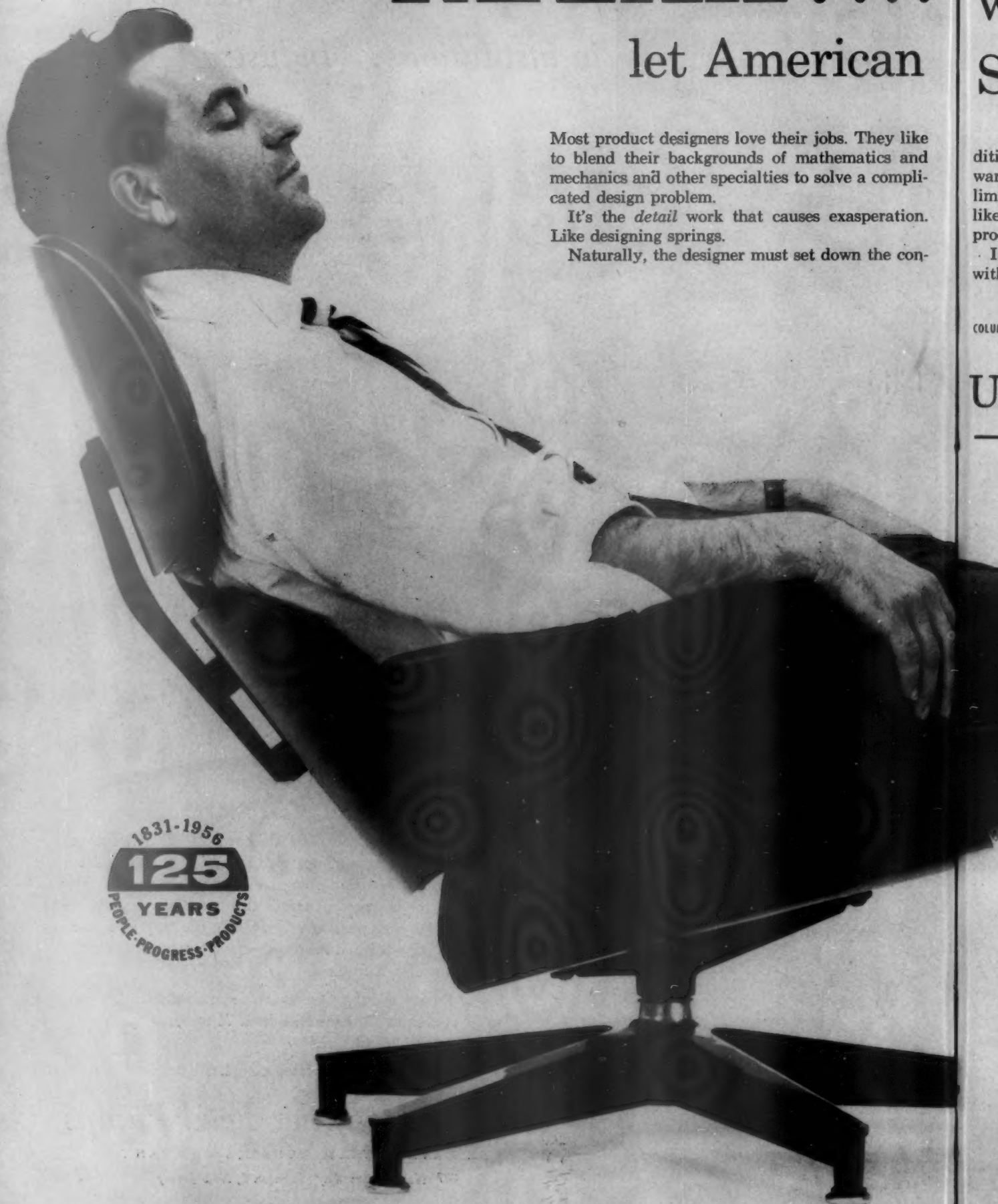
# RELAX!...

## let American

Most product designers love their jobs. They like to blend their backgrounds of mathematics and mechanics and other specialties to solve a complicated design problem.

It's the *detail* work that causes exasperation. Like designing springs.

Naturally, the designer must set down the con-



# when you have a spring problem Steel & Wire worry *for* you

ditions of use. He knows how much stiffness he wants, what fastening system is desirable, the limits of spring travel, corrosion conditions and the like. Now, the plot thickens. Can such a spring be produced, in quantity, at a reasonable price?

It is a rare designer who has concerned himself with these practical spring production problems.

For this reason, American Steel & Wire maintains a staff of *spring engineers* to relieve you of this detail. They may be able to suggest a minor design change, or a different grade of steel, or a different finish that will give you a better spring than you contemplated at a decided savings in cost.

Just call your AS&W salesman.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS - TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## USS AMERICAN QUALITY SPRINGS

UNITED STATES STEEL





CALL ON  
**Campbell**  
 For the Right Sling Chain  
 For Any Job!

**Guaranteed for a Full Year**

No matter what your requirements are for Sling Chains, you're sure to find what you need in Campbell's complete line—Cam-Alloy, High Test Steel, or Wrought Iron. And with each Sling Chain you'll enjoy the protection of Campbell's "Guarantee and Certificate of Test."

Every Campbell Sling (including attachments) is proof-tested at the factory to a load in excess of the working load limit and carefully inspected, link-by-link, before shipment.



An identification ring is attached to the master coupling of each Sling Chain with grade, type, reach and register number indicated.

Get complete information on the wide variety of Campbell Sling Chains. Write for your copy of the new Campbell Sling Chain Catalog. It contains specifications, working load limits, and helpful suggestions for use in ordering Campbell Sling Chains.



**CAMPBELL CHAIN**

*Company*

YORK, PA.

West Burlington, Iowa • Portland, Oregon • Sacramento, Calif.

Maker of the famous Lug-Reinforced Tire Chains



**Picking Purchasing Personnel**

(Continued from page 76)

successful purchasing executives, the best combination seems to be realism, ambition, capability, and emotional maturity.

**Emotional maturity.** This attribute is really a necessary ingredient in all the "will do" traits, most especially in stability and responsibility. It may be described as the extent to which a person has learned to govern himself. How much does he stand on his own feet, show self-sufficiency and self-discipline?

To the extent that he exhibits these traits, he will use his abilities effectively. To the extent that he shows the opposite tendencies (self-indulgence, selfishness, pleasure seeking, disregard for consequences, wishful thinking, insecurity, withdrawal) he will waste his talents and squander his potential.

Again the note of caution. No one is totally mature, and today's environment slows this maturing process. This concept must be applied with understanding. A person of 25 cannot be judged by the same standards of maturity as a 35-year-old. Further, jobs differ in the amount of maturity they require. Compare a department head's need for self-reliance with that of a junior clerk.

Emotional maturity is a desirable characteristic for purchasing agents because the nature of their work requires good judgment, responsibility, the habit of taking the long view, an ability to work with others, and a sense of dedication to duty. Together, these qualities go to make up what we call maturity.

**Work Habits**

An important part of this "can do" and "will do" approach is that evaluation comes after understanding. We cannot evaluate anything completely—a play, a book, or especially an individual—unless we first understand how it became what it is. From a series of similar actions in a person's past performance we can come close to predicting what he

(Please turn to page 276)



The storm broke on Harry when shipping was slow  
His boss used to thunder and bluster and blow.



Now shipping is swift—Harry's carefree and gay  
Dependable **RAILWAY EXPRESS** saves the day!

# The big difference is

Whether you're sending or receiving,  
whether your shipment is big or small, whether  
you're shipping here or abroad—always  
specify Railway Express. You'll find it makes  
the big difference in speed, economy, and  
safe, sure delivery. And now you can  
make fast, economical shipments via

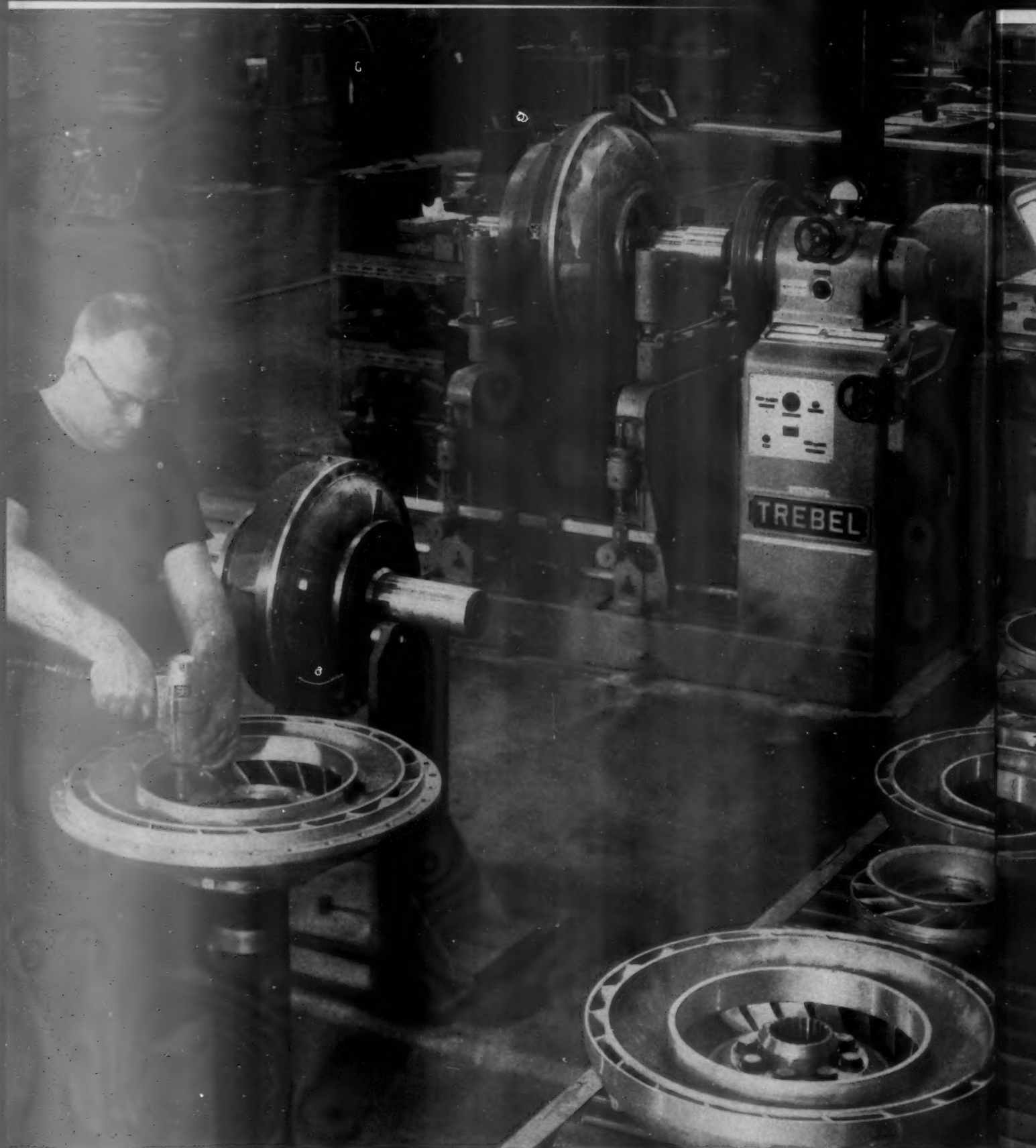
Railway Express Agency's new international  
air and surface connections. It's the complete  
shipping service, free enterprise at its best.



**... safe, swift, sure**

Railway Express World Wide Service now includes affiliations with: SEABOARD & WESTERN (and connecting carriers)  
TACA . . . TAN AIRLINES • also SCHENKER & CO. and the AMERICAN EXPRESS COMPANY foreign connection

For More Information Circle No. 342 on Inquiry Card—Page 17



Part of assembly line on National Supply's new torque converters at their Toledo plant. In the background is the balance testing and a portion of final assembly. At the right are Alcoa® Aluminum Precision Castings. Read why National Supply went to Alcoa for these castings, made to the tightest of specs.





O. H. Waffenschmidt, purchasing agent of National Supply Company at Toledo, Ohio, tells how he and his company solved a problem.



**“Extremely close tolerances,  
casting experience and  
superfine finish . . .  
*that's why National Supply buys  
aluminum castings from Alcoa*”**

“National Supply's new heavy-duty torque converters are a major development in power transmission. Highest operating efficiencies, size range of 100 to 1000 hp and service on equipment such as oil rigs and earth movers are factors that make them unusual.

“The heart of these rugged National Converters is three aluminum castings made to specs and standards not castable a few years ago.

“We went to Alcoa for assistance in designing the castings. Facilities, pattern and casting experience were important. Converter efficiency would be ruined by any of the blades being a hair off position or by a slight roughness in any of the fluid passages. Alcoa's precision plaster-mold casting techniques give us the extremely close tolerances and superfine finish that we have to have.

“We get performance and assistance from Alcoa, and at a price we think is right.”



**THE ALCOA HOUR**  
TELEVISION'S FINEST LIVE DRAMA  
ALTERNATE SUNDAY EVENINGS

**Your Guide to the Best  
in Aluminum Value**



## RIGGED FOR SAFE DIE HANDLING

To handle heavy, expensive die sets with complete safety, this manufacturer uses eight Laughlin Eye Hoist Hooks—two on each corner. The wire rope is positively secured with genuine Crosby® Clips and Laughlin Thimbles protect the rope at the lifting points.

**LAUGHLIN HOOKS**—drop forged and heat treated—take the risk out of this job. They're precision designed and manufactured from special high quality steel—construction that results in maximum strength and uniformity without excessive weight. Hooks are available to fit rope up to 1½" with capacities up to 20 tons!

**TOUGH LAUGHLIN THIMBLES**, manufactured from hot rolled steel bars, resist crushing forces. They're offered in sizes to fit all ropes from ⅛" to 2¼"!

**GENUINE CROSBY CLIPS** provide maximum holding power for wire rope from ⅛" to 3" in diameter. In every application where the safety of men or materials must depend upon wire rope rigging, safety engineers specify Crosby Clips! Look for the "Red U-Bolt"®—you'll see it in use everywhere—in every industry!



## THE STRONGEST LINK.

Wherever a chain link is replaced or connections made, a potential safety hazard exists—unless genuine Laughlin "Missing Links"® are used to do the job! This easily installed split link is essential whenever maximum safety is required. It's as strong as BBB chain! Drop forged "Missing Links" are matched to a perfect fit under tons of pressure. Your Crosby-Laughlin Distributor carries a complete range of sizes from ⅜" to 1⅞"! Insist on the genuine "Missing Link".

®REGISTERED TRADEMARK

Stocked and sold by leading distributors everywhere

# CROSBY-LAUGHLIN *Division*

American Hoist and Derrick Company  
**FORT WAYNE 1, INDIANA**

For More Information Circle No. 344 on Inquiry Card—Page 17

## Picking Purchasing Personnel

(Continued from page 272)

will do in the future. Just one occurrence of a trait is not enough for judgment.

There has to be a pattern of action before a trait can be described as a work habit. The most obvious example of this is the job-jumper who changes positions constantly for one reason or another. His work pattern—or really his "quit pattern"—will probably extend into the future and make him a poor employment risk.

This approach to understanding and evaluating an applicant on the basis of his abilities and motivations can be extended to other areas. For example, it can give direction to a training and promotion program. Certain people in the department may display the talents and potential leadership ability to hold executive positions some years hence. If so, a training program (which might include time in other departments) could be initiated for them today. Plus the obvious advantages to the company of this assurance of a supply of good executives, there are advantages to the trainee in added self-confidence and satisfaction in his work.

Finally, this approach can be a springboard for profitable introspection. How about self-evaluation? Have you ever wondered what you can do to lift yourself up by the bootstraps? Perhaps by considering your abilities (or lack of them) and your motivations (or lack of them) you may gain a new perspective on your job, company, and future life. In any event, even if all the introspection leads to naught, you will have had the satisfaction of spending your time in contemplating a most delightful subject!

**FOR MORE INFORMATION  
ON PRODUCTS  
IN THIS ISSUE  
PLEASE USE  
INQUIRY CARD—PAGE 17**

# PROMPT DELIVERY

## on Monel® and nickel alloy forgings and castings

For prompt service on orders for nickel alloy castings and forgings... see Philadelphia Bronze & Brass. Our completely equipped facilities can give you quick delivery on pieces made to your exact specifications from cast and forged Monel, pure nickel, 70% copper-30% nickel and a variety of other high-nickel alloys, including forged "K"® Monel.

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22nd and Master Streets, Philadelphia 21, Pa.

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**MALLORY**

AUGUST, 1956

For More Information Circle No. 345 on Inquiry Card—Page 17

277





Corrugated steel construction of these units provides strength, assures long service life. Special channel construction under boxes permits free movement of casters, yet allows four-way entry for lifting and storing.

# SPECIALLY DESIGNED solve a problem,



# REPUBLIC



*World's Widest Range of Standard Steels*

# REPUBLIC BOXES speed handling ...save space

Today's modern high-speed machines may meet the demand for increased production. But they can also create problems.

This was the case at the Crown & Closure Division of Crown Cork and Seal Company, Inc., Baltimore, Maryland, world's largest maker of metal closures for glass containers.

Their problem was the handling, moving and storing of the tremendous daily output of a battery of screw cap machines. Some of the machines turn out as many as 100,000 screw cap shells per hour. A handling unit was required that could be used to rapidly move the semi-finished caps from the machines to a final manufacturing operation located on another floor—or to a storage area for future use.

Republic Materials Handling Engineers were invited to work on the problem with Crown Cork Engineers. The solution was the design and fabrication by Republic's Pressed Steel Division of the special box-type trucks shown at left.

Equipped with casters, the boxes can be moved easily by hand. A time-saving feature is a hinged door which opens when the box is tilted forward. This permits the caps to slide out and down a chute to the floor below where final manufacturing is completed. The entire handling operation is simplified and speeded. Storage space is conserved.

This is another example of customer service from Republic—another example of experience and versatility in solving a materials handling problem. Perhaps you would like to talk over your handling problems with a Republic Engineer. There's no obligation. Simply contact the nearest Republic Materials Handling Equipment Representative. Or send us the coupon.

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It is yours for the asking—write for your copy today.



WORLD'S LARGEST  
PLATING SUPPLIER

## Good Judgment

(Continued from page 128)

tal effort that is consciously though unsuccessfully, exerted to solve the problem. Without that "self-starter" the inner mind does not seem to perform.

It is hard to exercise ones' best judgment under stress. Perhaps that is why we so often hear people say, "Let me sleep on it," when the stress of concentration gets in the way of objective thinking.

Where instant decisions under trying conditions are expected, the alternative is to so train the mind that it will almost automatically function when required under those conditions.

I have always admired the executive who can give an off-hand, intelligent overall answer to a difficult problem. This, of course, is largely the result of experience in dealing with similar problems. The same factors, constantly in play in a given field, must combine in a certain series of combinations time after time. An open mind with that experience, certainly affords better than average good judgment.

### High Batting Average

A high official in our foreign service, widely respected for his good judgment, shrugs off the legend of infallibility. "I've made plenty of mistakes in my time," he says. "I do try not to make the same mistake twice." Actually, by not being afraid to make a mistake once, his mind is always alert and free from tension. And by thinking this way, his batting average on initial judgments is exceptionally high.

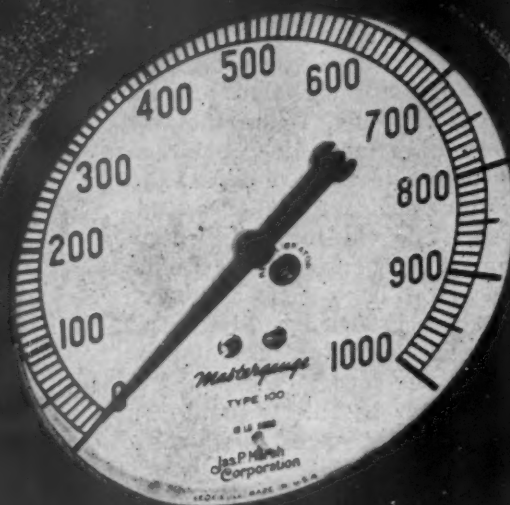
Children's judgments are usually on a black-and-white basis—the good man and the bad man, the one who is or is not on our side. It is only when he realizes that there are various shades of gray between black and white that he really has to think. Of course, the many gray shades can confuse us to the point where we are arbitrarily forced back to the black-and-white standards. It is possible to think oneself into a

(Please turn to page 282)

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←on Inquiry Card—Page 17



# MARSH



*The world's finest pressure gauge*

JAS. P. MARSH CORPORATION • SKOKIE, ILLINOIS

THE STANDARD  
OF ACCURACY

## Good Judgment

(Continued from page 280)

state of complete bewilderment and inaction.

### Yes-Men and No-Men

The confirmed "Yes Man" builds a barrier to his own advancement. Business needs men of independent good judgment and convictions.

The vice president of a large corporation has the habit of saying, "I don't like it," whenever a report is handed to him. The first time this happens to a new man, it is downright disconcerting. The initial reaction may be to suspect some glaring error—to offer to do the job over again. But that is exactly wrong. The blunt statement is in effect a challenge to justify, in a few short sentences, the work and the recommendations. If that is successfully and confidently done, the report is frequently passed without even being read. This saves the VP's time and forces his men to be extremely critical of their own work.

The head of an aircraft company makes it a practice of changing some detail in every completed new design. He is not always right, and is often overruled by his engineers, but it is his way of stimulating his men to be sure of their reasoning. He confesses that his technique is not without hazards of its own. Unless he were sure that his men will not accept "No" without an argument, he might find himself begging for their suggestions. But by showing respect for their judgment in the subsequent discussions, he inspires enthusiasm and provides the incentive for continued effort based on sound thinking. When the engineers have made their point and he defers to their opinions, they gain respect for his good judgment. The old-timers, who have come to recognize this procedure for what it is—a transparent technique—acknowledge him as an imaginative leader. "But it keeps us on our toes," they say. "We had better be able to justify our judgment, or some day that 'No' will stick."

## Why A Purchasing Manual

(Continued from page 124)

compressor and pipeline construction and an expediting manual were prepared for construction personnel. (See *PURCHASING*, August 1952 and June 1953.)

After further extensive preparation, the Director of Purchases submitted a draft of a comprehensive purchasing and stores manual to the Vice President in charge of Operations and Engineering, for study and approval. This was circulated also to the accounting and personnel departments, to determine whether any purchasing policy might be in conflict with a personnel or accounting policy.

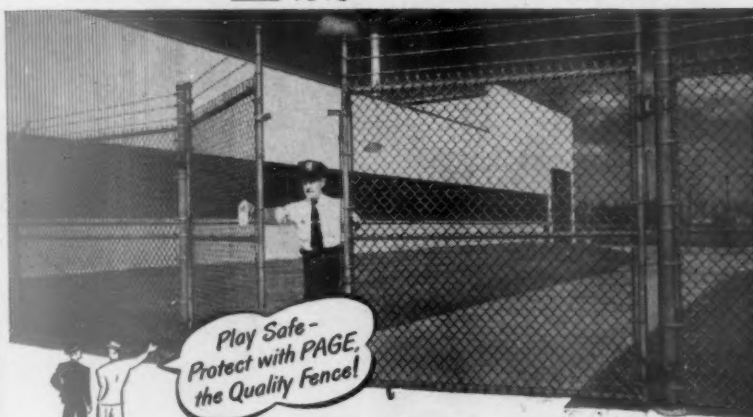
The outcome was the adoption of five statements embodying written company policies on:

Purchasing & Stores Dept.  
Transportation & Traffic Dept.  
Public & Employee Relations  
General Accounting Dept.  
Plant Accounting Dept.

A complete set of these manuals, in five volumes, was distributed. (Please turn to page 284)

## PAGE FENCE

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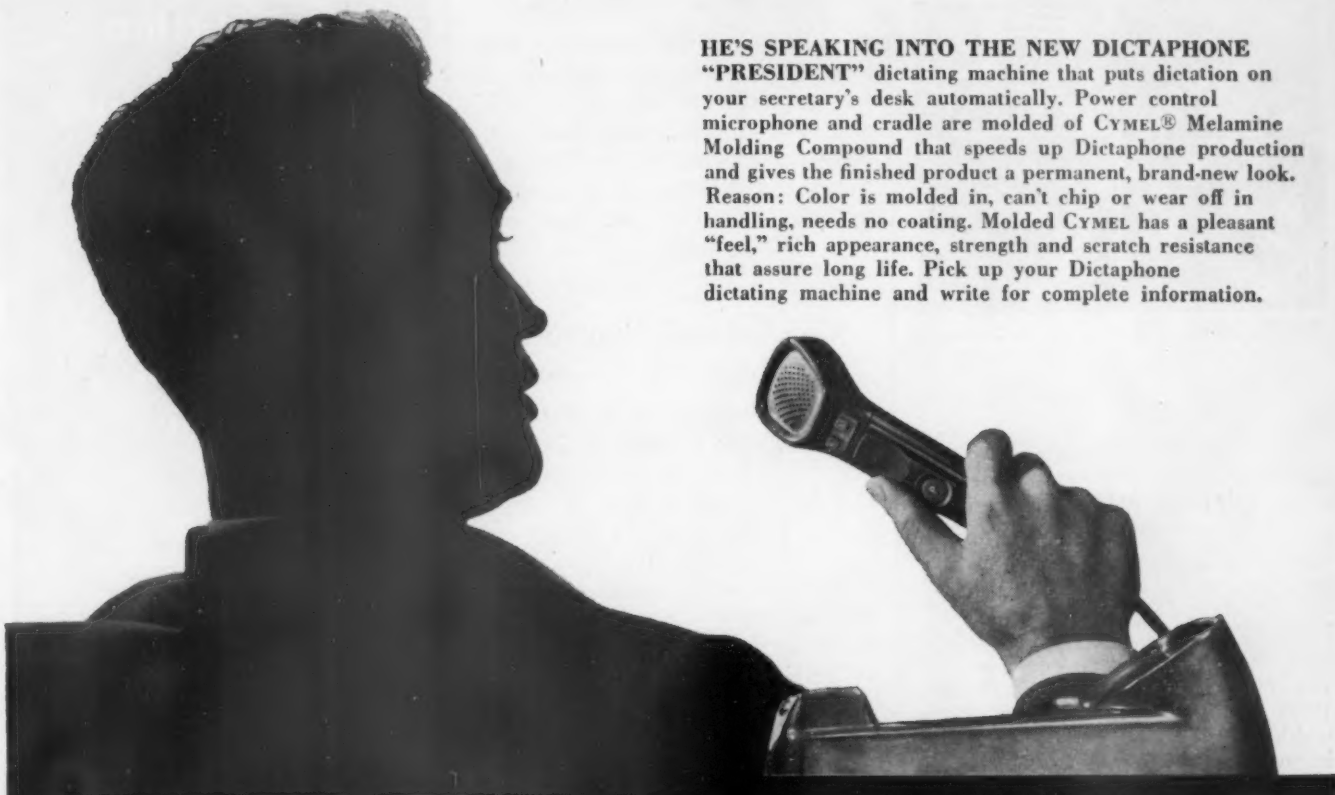
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**HE'S SPEAKING INTO THE NEW DICTAPHONE**  
**"PRESIDENT"** dictating machine that puts dictation on your secretary's desk automatically. Power control microphone and cradle are molded of CYMEL® Melamine Molding Compound that speeds up Dictaphone production and gives the finished product a permanent, brand-new look. Reason: Color is molded in, can't chip or wear off in handling, needs no coating. Molded CYMEL has a pleasant "feel," rich appearance, strength and scratch resistance that assure long life. Pick up your Dictaphone dictating machine and write for complete information.



**NEW HEIGHTS IN SAFETY AND STRENGTH:** Putnam Rolling Ladder Company utilizes sandwich construction of glass fiber and LAMINAC® Polyester Resin to create light-weight ladders with non-conducting properties that make them ideal for power and electrical work. Their non-corrosive properties and superior strength make them ideal for chemical plants—in fact, they're excellent for any kind of plant under any kind of condition. Consider the advantages of chemical, abrasion-, impact-, arc- and weather-resistant LAMINAC for your product.



**NO GLUE FAILURE IN THREE YEARS:** White Furniture Company, respected maker of many kinds and styles of fine furniture, uses Cyanamid's URAC® 185 in cold press operations for gluing woods into proper thicknesses for columns, legs and curved portions. Before using URAC 185, various bonding problems were encountered. Since its use, three years ago, *White hasn't had one instance of glue failure!* URAC 185, the glue that *does* hold a square peg in a round hole, is the rotproof, lifetime glue that can eliminate your rejects and complaints.

There's everything to gain in learning how your product or process can use the proved superiority of Cyanamid melamine, urea and methylstyrene molding compounds... polyester resins... resin adhesives... resins for surface coatings. Dictate a letter or give us a call.

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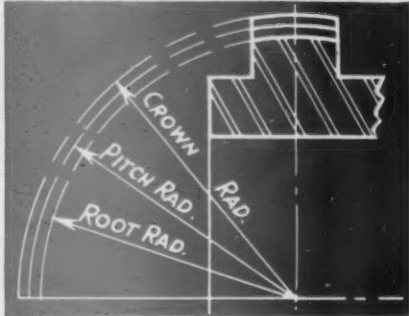
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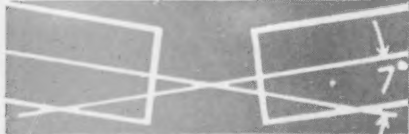




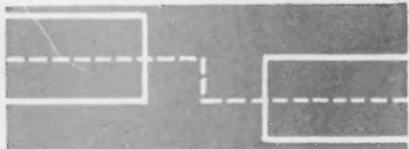
## PERFECT SPHERICAL TOOTH FORMATION PERMITS GREATER.....



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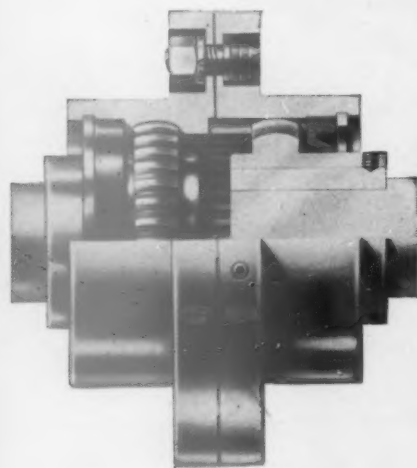
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The Philadelphia SPHEREFLEX COUPLING features a Spherical cut tooth which allows a ball and socket action between mating teeth up to 14° angular misalignment—and due to this angular capacity, a much greater amount of parallel misalignment is possible, which varies directly as the pitch diameter of the gears. All this is accomplished by gearing having a minimum back-lash.

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For More Information Circle No. 354  
on Inquiry Card—Page 17

## Why A Purchasing Manual

(Continued from page 282)

uted to some 80 company locations. The management feels that the expenditure of money, time, and effort in compiling this clear, coordinated statement of company policies will be amply justified in smooth, efficient operation over the coming years.

## Conditional Contracts

(Continued from page 85)

even the possession and use of the property agreed to be conveyed, and it nowhere appears that he lost one dollar by reason of his promise or by reason of the buyer's default.

"In view of the conclusion that the contracts were in effect rescinded, the right of the seller to retain the money advanced cannot be sustained. And as he made no claim whatever for damages suffered by the default of the purchaser, if entitled to recover anything, he was entitled to recover all. Money paid under a contract which is subsequently rescinded is never forfeited unless there is an express or implied contract to that effect and upon such rescission it must be returned to him who has advanced it."

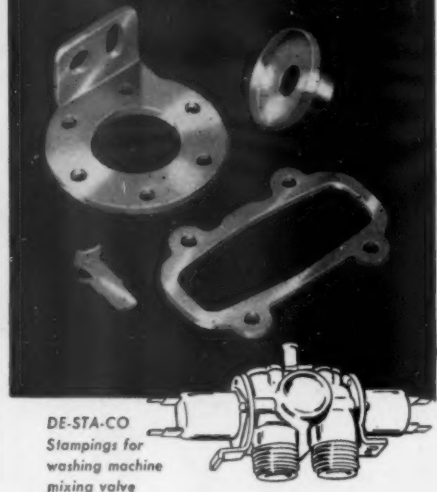
## Modern Interpretations

The tendency of the courts to apply this rule of law to defaults in the performance of the purchase contracts of chattels, that in the past has to a large extent been restricted to contracts for the purchase of realty, is made the subject of a comment in a recent law review article published only a few months before the decision of the action involving the recovery of payments made under this construction equipment agreement.

"In many cases involving the sale of goods and chattels the rate of depreciation after sale will be so high that the forfeiture could hardly be established. Yet it should also be obvious that the termination of a personalty contract without a recovery by the

(Please turn to page 286)

When the  
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depends on  
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stampings  
like these . . .



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Stampings for  
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Vital to most automatic washing machines is the mixing valve which regulates inlet water temperatures and flow.

For critical stampings in this vital part, a world-leading controls manufacturer\* chose Detroit Stamping Company.

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**PURCHASING**

## Ship fast

**FASTER ON THE GROUND**—United uses special equipment to handle your shipment swiftly, deftly!

**FASTER IN THE AIR**—United's "Big Lift" DC-6As with weather-mapping radar trim hours off coast-to-coast air time!

## Ship sure

**YOUR SHIPMENT** can be preloaded on recessed-wheel aluminum pallets for protection and speed in handling!

**CABIN TEMPERATURES** in DC-6As are carefully controlled to suit your shipment—range from 40 to 70 degrees!

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**RESERVED AIR FREIGHT** guarantees you space dependability on all Cargoliners—and Mainliners!

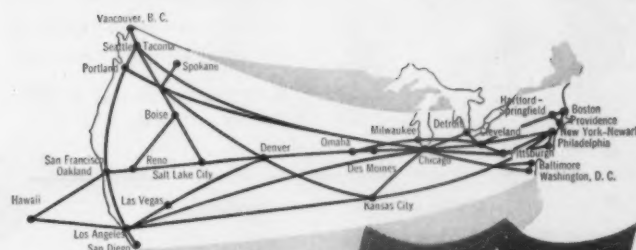
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| DENVER to OMAHA . . . . .          | \$6.42  |
| SEATTLE to LOS ANGELES . . . . .   | \$9.80  |
| PHILADELPHIA to PORTLAND . . . . . | \$24.15 |
| SAN FRANCISCO to BOSTON . . . . .  | \$27.00 |

\*These are the rates for many commodities. They are often lower for larger shipments. Rates shown are for information only, are subject to change, and do not include the 3% federal tax on domestic shipments.



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- Consistent quality of work:** The cold heading process results in high speed mass production. Parts are produced faster with less cost on large orders than by other methods.
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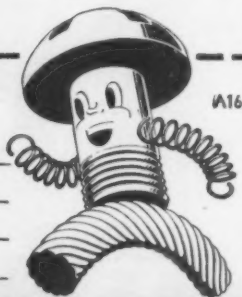
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**KEYSTONE WIRE for Industry**

For More Information Circle No. 357 on Inquiry Card—Page 17

## Conditional Contracts

(Continued from page 284)

purchaser imposes a forfeiture upon him and results in undue benefit to the seller. Where such a forfeiture can be shown, the purchaser of chattels seems as much entitled to relief as the purchaser of real property. There is no difference in the situations which would justify relief in one case and not in the other."

This observation rests on an earlier comment by a famous legal authority, that, "Few questions in the law have given rise to more discussion and difference of opinion than that surrounding the right of one who has materially broken his contract without legal excuse, to recover for such benefits as he may have conferred on the other party by part performance.

"On the one hand it seems a violation of the terms of a contract to allow a purchaser in default to recover—to allow a party to stop when he pleases and sell his part performance at a value fixed by the jury, to a purchaser who has agreed only to pay for full performance. On the other hand, to deny recovery often gives the seller more than a fair compensation for the injury he has sustained and imposes a forfeiture on the purchaser. The second of these opposing policies has steadily increased in favor in recent years."

## Computing Damages

Recently in one of the western states a buyer of real estate under an instalment contract had paid over \$3,100 in instalments on the purchase of a house besides making improvements to the property exceeding that amount. When two of the buyer's checks, of \$42.50 each, were returned unpaid by the bank the seller declared the contract at an end.

In its decision of an action by the buyer to reinstate this purchase contract the court said, "A purchaser in default who is seeking to keep the contract alive, however, is in a better position to secure relief than one who is seeking to recover back the ex-

(Please turn to page 288)





...the shapers of  
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## ALLEGHENY LUDLUM HIGH SPEED STEEL TOOL BITS



In a complete range of  
tungsten, moly, cobalt,  
and high vanadium types

PANTHER 5  
SUPER PANTHER  
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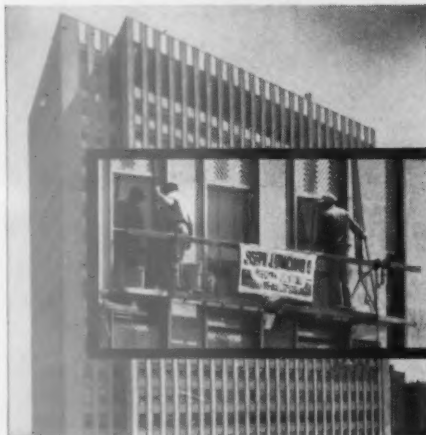
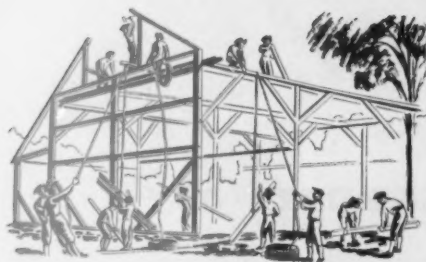


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For More Information Circle No. 358 on Inquiry Card—Page 17



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From house raising to erecting and maintaining modern skyscrapers — right down through 114 years — Americans have depended on NEW BEDFORD ROPE. Its strength and quality has been tested and proved again and again.

It's laid right for maximum flexibility and easy handling . . . waterproofed for protection against moisture and rot . . . and lubricated to give long economical service.

That's why industry and utilities consider NEW BEDFORD the world's best rope buy.



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NEW BEDFORD, MASSACHUSETTS  
Serving the Maritime Industry Since 1842

For More Information Circle No. 359  
on Inquiry Card—Page 17

## Conditional Contracts

(Continued from page 286)

cess of what he has paid over the amount necessary to give the seller the benefit of his bargain after performance under the contract has terminated. In the latter situation it may be so difficult to compute the seller's damages that the purchaser will be unable to prove that the seller will be unjustly enriched by allowing him to keep all the money that has been paid.

"On the other hand when the default has not been serious and the purchaser is willing and able to continue with his performance of the contract, the seller suffers no damage by allowing the purchaser to do so. In this situation if there has been substantial performance or if the purchaser has made substantial improvements in reliance on his contract, permitting the seller to terminate the buyer's rights and keep the instalments that have been paid can result only in the harshest sort of forfeitures. Accordingly relief will be granted whether or not time has been made of the essence."

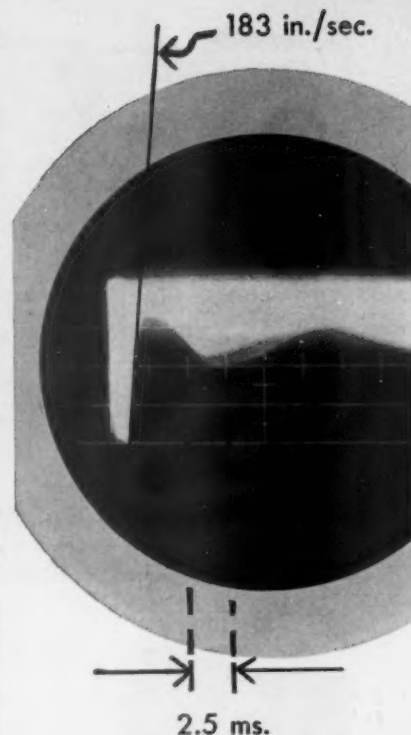
### Rule of Equity

In the application of the principles of these decisions in the determination of the controversy over the seizure of this equipment for the failure of the purchaser to pay the \$6,525.57 remaining due on the purchase contract for \$29,412.78, after using the equipment for a year and a half, the court said in its disposition of the reciprocal charges and credits of the parties to the contract,

"Although the purchaser in a conditional contract is a wilful defaulter the purchaser may recover the amount which constitutes the unjust enrichment of the seller by reason of the termination of the contract.

"Had the contract been completed by the purchaser the seller would have received a little over \$29,000. By repossession of the equipment which had a value of \$28,000 at the time of the repossession and the payments which the purchaser made, the seller re-

(Please turn to page 290)



## How to move a plunger at 900 g's

**Problem:** Design an assembly to release a gate on the sorting mechanism of a business machine.

The assembly must actuate a plunger, getting it out of the way in 2.5 milliseconds.

It must be reliable over a long life. Keep it small. Keep cost low.

**Our solution:** A marriage of pulse circuit techniques and electromagnetic plunger techniques in an electromechanical transducer.

The final unit develops an acceleration of 950 g's and a peak velocity of 183 inches per second. A force of 74 pounds moves the 1.25 ounce plunger .051 inches. The plunger moves 90% of this distance in only 0.5 millisecond—only 1/5th of the time allowed.

If you want an electronic assembly, designed and produced in large or small quantities, contact...

**CALEDONIA**

ELECTRONICS AND TRANSFORMER CORPORATION

Dept. P-8, Caledonia, N. Y.

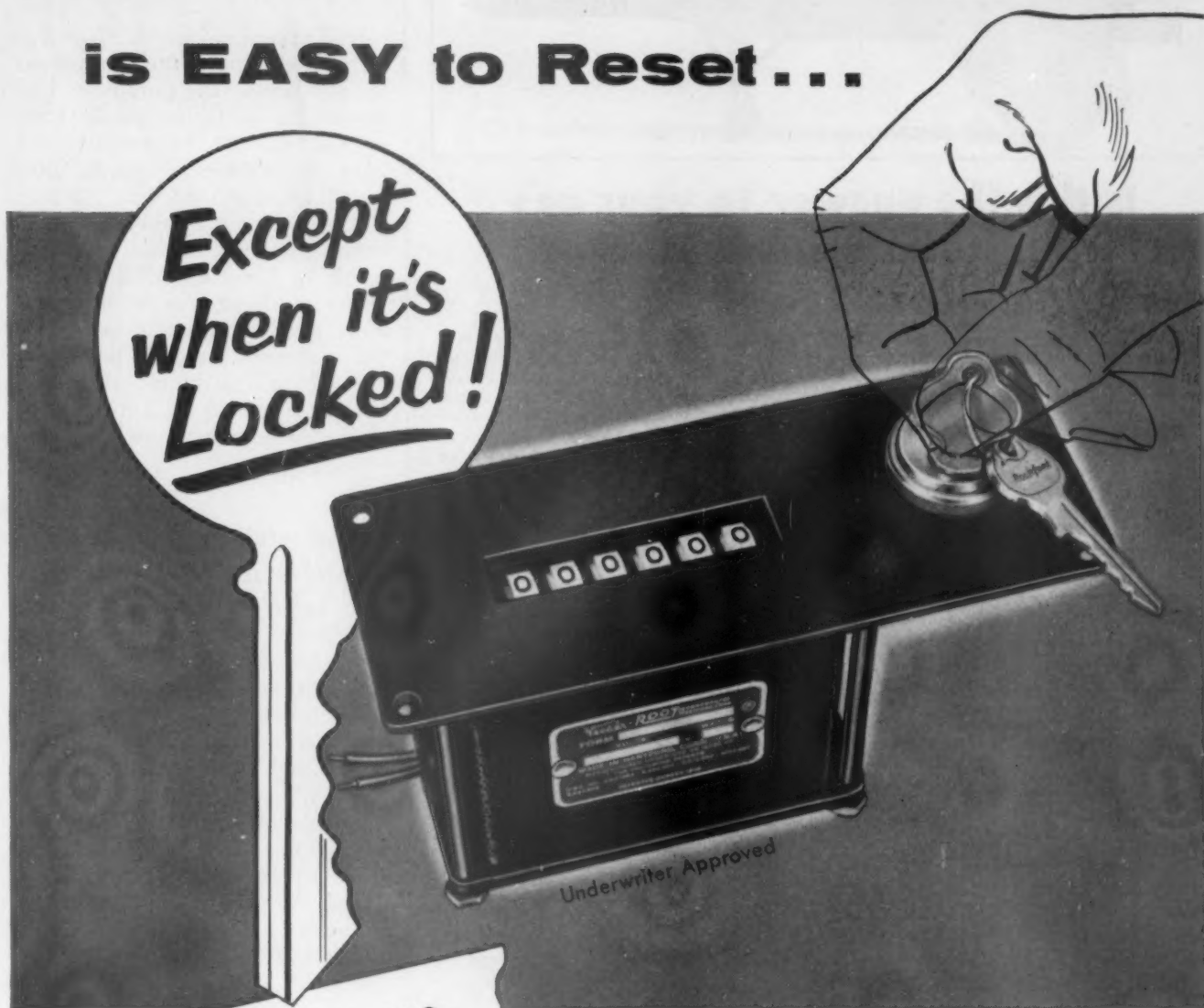
In Canada: Hackbusch Electronics, Ltd.  
23 Primrose Ave., Toronto 4

For More Information Circle No. 360  
on Inquiry Card—Page 17

**PURCHASING**

# This **NEW** Magnetic Counter is **EASY** to Reset...

**Except  
when it's  
Locked!**



Added Evidence  
that —

## Everyone Can Count on **VEEDER-ROOT**

Designed for panel mounting where remote indication is required, this electrically operated counter is a compact package 5.5" long, 2.1" wide, 2.7" high. Capacity: 1,000 counts per minute. Power consumption, 8 watts. Stocked in 110 and 220 AC and DC. Easy to reset, except when locked... then the sturdy tumbler-lock\* puts the damper on tampering. Yet one

turn of the key resets all 6 figures to zeros.

This new Magnetic Counter is one of the thousands of Veeder-Root standard and special counters... electrically, mechanically and manually operated... in daily use throughout the world in industry, business, science and medicine. You, too, can count on Veeder-Root... to help you count anything you need.

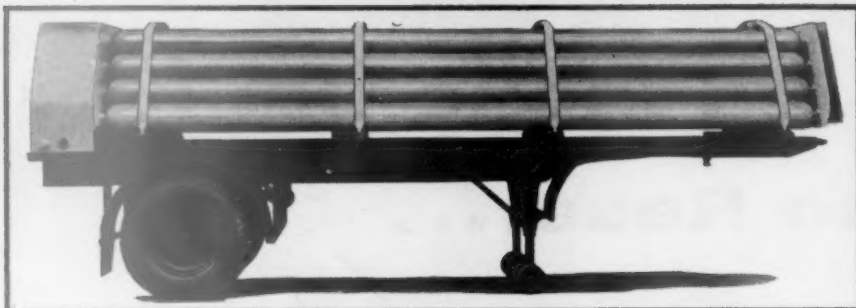
\*National Lock Co. Lock No. 68-4837; Key D-428

Stocked at  
Hartford 2, Conn. • New York 19, N. Y.  
Greenville, S. C. • Chicago 6, Ill.  
Montreal 2, Canada  
Offices and Agents in Principal Cities



**VEEDER-ROOT**  
"THE NAME THAT COUNTS"





## Is this the answer to your gas transportation and storage problems?

**T**aylor-Wharton GAS TRANSPORTS offer a practical means of transporting and storing large quantities of compressed gases. Oil refineries use them for hydrogen and nitrogen in starting the Reforming process. Chemical, electronics and food processing companies, having their own gas generators, use them for inter-plant distribution of gases and other purposes. They also find them excellent as a flexible means of temporary storage.

Especially effective for the lighter, not easily liquefied gases, such as hydrogen and helium, they are also used for oxygen, nitrogen, boron trifluoride, ethylene, etc. In some cases they are used instead of large permanent storage installations, with less investment and greater flexibility.

The tubes are made to ICC-3A 2400 specifications and completely heat-treated. The trailers are specially constructed for this service in single and double axle models.

Ask us for further information, describing your requirements.

**Taylor-Wharton Co.**  
Division of  
**Harsco Corporation**  
More than a century in Harrisburg  
HARRISBURG 19, PA. EASTON, PA.

For More Information Circle No. 346 on Inquiry Card—Page 17

## Need HOSE in a HURRY?

**Suction • Water • Steam  
Air • Multi-Purpose  
Discharge • Pile Driver**

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

|   |  |
|---|--|
| ATLANTA 5, Ga.<br>477 Eighth St., N.E.      | INDIANAPOLIS 4, Ind.<br>309 North Capitol Ave. |
| BALTIMORE 18, Md.<br>15 East 21st St.       | MEMPHIS 3, Tenn.<br>268 Madison Ave.           |
| BOSTON (Atts. 34), Mass.<br>12 Franklin St. | NEW YORK 7, N. Y.<br>81 Murray St.             |
| CHICAGO 10, Ill.<br>10 West Hubbard St.     | PHILADELPHIA 6, Pa.<br>311 North Randolph St.  |
| CINCINNATI 2, Ohio<br>49 Central Ave.       | ST. LOUIS 8, Mo.<br>4018 Olive St.             |
| CLEVELAND 15, Ohio<br>2731 Prospect Ave.    | SYRACUSE 3, N. Y.<br>739 Montgomery St.        |
| DETROIT 27, Mich.<br>13801 Schoolcraft Ave. |  |

**GASOLINE  
WATER  
AIR  
OIL  
WELDING  
COOLANT**



**ONE hose does MANY jobs**  
Continental Multi-Purpose Hose fills almost ANY need—air, water, welding, oil, gasoline, etc. This all neoprene, top quality hose resists oil, grease, heat. Reinforced with rayon braid for extra strength, flexibility; lighter weight. Sizes 3/16" through 1 1/2". Ask for catalog of HOSE and PROTECTIVE CLOTHING.

**HOSE by CR-  
CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1983 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For More Information Circle No. 347 on Inquiry Card—Page 17

## Conditional Contracts

(Continued from page 288)

ceived approximately \$52,000. But if he had rented the equipment for the period the purchaser had possession of it he would have earned \$37,400 in rentals and have the tractors, worth \$28,000, or a total of \$65,400.

"The purpose of the rule is to prevent unconscionable inequities resulting from a forfeiture. But where, as here, the seller would have received greater benefit if the property would have remained in his hands than the amount obtained by him because of the forfeiture, there is no inequity."

## Industrial Floor Wax Dries in 20 Minutes

A water emulsion floor wax, that produces a brilliant mirror-like surface without buffing is now available. It contains a special synthetic resin that gives the wax its hard tough mirror-like finish and another ingredient, "Ludox," that affords it greater slip resistance. The finish is said by the manufacturer, West Disinfecting Co., 42-16 West St., Long Island City, N. Y., to dry in 20 minutes. It is easy to apply with a mop and initial coats will cover 1500-2000 sq. ft. per gal. Surfaces may be lightly buffed to remove scratches.

## Demountable Wheel Provides Low Tractive Effort

A demountable replacement tread wheel has been developed by Albion Industries, Inc., Albion, Mich., for medium and regular duty casters. It provides low tractive effort, heavy load capacity, maximum floor protection and fast and simple tire replacement. The demountable wheel plates are sturdy 12-gage steel, bolted over a tubular steel hub. Cadmium plating offers maximum corrosion resistance and roller bearings are held in a formed cup to keep lubricants in and dirt out.



## For Plant BEAUTY, as well as EFFICIENCY, See Your Standard Oil Salesman

Save time and trouble by ordering plant upkeep materials from the same Standard Oil Industrial Salesman who offers you fine lubricants and cutting oils. *One call does it*—for floor maintenance, tree and lawn care, insect and weed control—and machine protection. He has a complete line of high-quality Standard Oil Company products, plus the training

and experience to advise you in their application.

For easier maintenance all around your plant, put your problems in the hands of your Standard Oil Man. Call him any time. He'll see that you get prompt delivery from the nearest of several hundred well-stocked warehouses throughout the Midwest.



**Self-polishing, fast-drying.** For linoleum, asphalt tile, rubber tile, composition, hardwood. Use mop or pad; no buffing. Resists heaviest traffic.



**Concentrated killer for flies and mosquitoes.** Mix with water—spray on screens, around doors, on shrubs. Leaves long-lasting, insect-killing deposit.



**Kills broad-leaved weeds like dandelions, plantains.** Harmless to grass. Mix with water for easy, economical weed control.

**STANDARD Penetrating Sealer**—Hard, water-proof, permanent seal for wood, cork, Masonite and concrete. Deep penetration—forms tough, non-gloss, non-slip base for wax or finish.

**STANDARD Ultra Finish**—Tough, non-slip, gym-type finish for wood, cork, linoleum, magnesite, concrete. Resists boiling water, rubber markings, alkalies, mild acids, heat and cold.

**STANDARD Liquid Gloss**—Cleans, polishes unfinished floors, woodwork, furniture, in one operation. Applies easily with mop, sprayer or soft cloth. Restores lustre—keeps down dust—hides scratches.

**STANDARD Crabgrass Spray**—Destroys crabgrass and prevents reseeding. Won't harm desirable grasses. Easy to use, just as it comes from the can.

**STANDARD Brush Killer**—Highly effective against woody plants—oak, hickory, elm,

osage orange, poison oak, poison ivy, many others.

**STANDARD Elm Spray**—Destroys insect carriers of Dutch elm disease and elm phloem necrosis, other leaf-eating insects.

**STANDARD Summer Emulsion Concentrate (VERDOL)**—Safe, effective. Gets scale crawlers, red spiders, white flies.

**STANDARD Commercial Insect Spray**—A non-toxic pyrethrum spray approved for use where food is handled. Fast-acting against all flying and crawling insects.

**STANDARD Aerosol Insect Killer**—Handy for spraying closets and rooms. Kills flies, mosquitoes, gnats, moths, other insects. Just press the button.

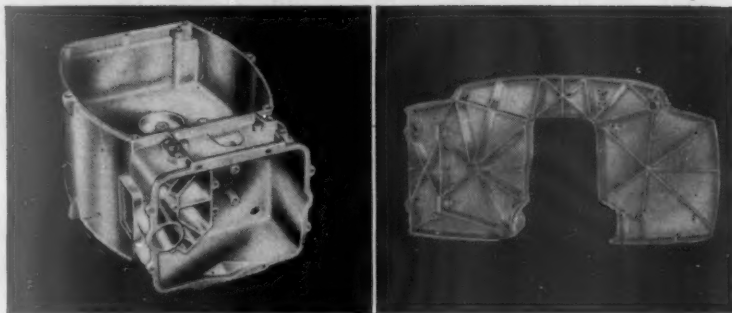
**STANDARD Insect Spray with DDT**—For surface spraying inside buildings. Long-lasting residual effect—controls insects for weeks. Ready to use.

**ONE CALL—  
ONE ORDER DOES IT**

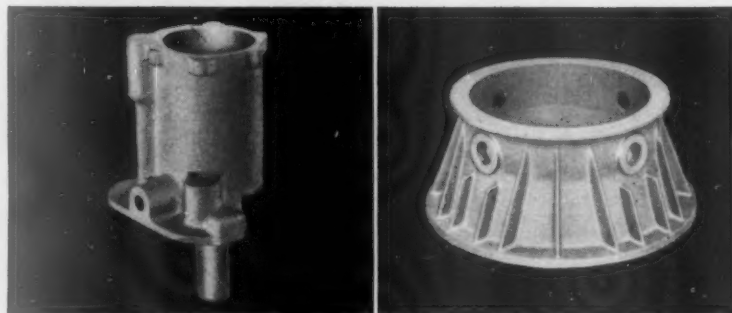


**STANDARD OIL COMPANY**  
(INDIANA)

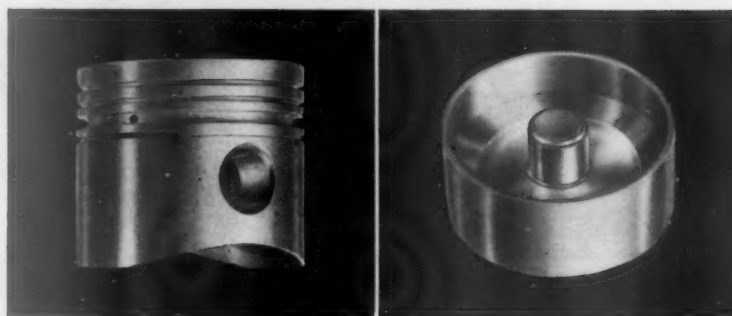
## for die castings



## ...permanent mold castings



## ...impact extrusions



Regardless of your product, if you use castings or impact extrusions, Thompson's experienced and creative engineers can show you where and how to simplify your operations and save on costs. Let us quote now on your plans. Just write, wire or phone Dept. P-8, Light Metals Division, Thompson

Products, Inc., 2269 Ashland Road, Cleveland 3, Ohio, HEnderson 1-6765.

**You can count on**  
**Thompson**  
**Products**

LIGHT METALS DIVISION

2269 Ashland Road • Cleveland 3, Ohio

For More Information Circle No. 363 on Inquiry Card—Page 17

## Boiler Plate Contract

(Continued from page 120)

there is always a hope of a better settlement and, more important, future business. Despite these incentives, it would be best to add a clause substantially as follows:

"All matters connected with any phase of the termination claim shall be processed in accordance with the procedures set forth in Section VIII of the Armed Services Procurement Regulations."

### Books and Records

This provision in prime contracts expressly instructs the prime contractor to inset in all subcontracts a clause giving the Comptroller General or his duly authorized representative the right to examine those portions of the books and records of the subcontractor pertaining to the contract. Many prime contractors have been severely criticized for not following the exact wording set forth in their prime contracts, and in several cases it would seem that terminations resulted solely from gross carelessness in not properly including this clause in subcontracts.

Many additional causes affecting subcontracts are included from time to time in prime contracts. For example, the Progress Payments clause will provide that progress payments may be made to subcontractors provided the terms of the progress payment provision in the subcontract are no more favorable to the subcontractor than those from the government to the prime contractor.

In order to do his job well, the buyer must be familiar with all the tools of his trade. The purchase order is the most important of all, and that includes both sides of the document. Hence, it is, the obligation of every purchasing agent to familiarize himself and each of his buyers with the meaning of the provisions of the purchase order and their effect on the company. The purchasing agent must insist that other de-

(Please turn to page 294)





**got a problem?**

If it's a *special steel* problem, let Crucible solve it for you quickly. Experienced Crucible sales engineers are always available to help with problems of selection or fabrication. And all Crucible warehouses are geared to supply the steels you need when you need them.

You can depend on Crucible — *big enough to serve you, small enough to want to.*

*Stocks maintained of:*

*Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting Die and Plastic Mold Steel, Drill Rod, Tool Bits, and Hollow Tool Steel Bars) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . Max-el, HY-Tuf, AISI Alloy . . . Onyx Spring, Hollow Drill Steel and other special purpose steels.*

**CRUCIBLE**

**WAREHOUSE SERVICE**

**Crucible Steel Company of America**

General Sales Offices, The Oliver Building, Mellon Square, Pittsburgh 22, Pa. Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Dayton • Denver • Detroit • Harrison • Indianapolis • Los Angeles • Milwaukee • New Haven • New York • Philadelphia • Pittsburgh • Portland, Ore. • Providence • Rockford • San Francisco • Seattle • Springfield, Mass. • St. Louis • St. Paul • Syracuse • Toronto, Ont.

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AUGUST, 1956

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## Boiler Plate Contract

(Continued from page 292)

partments in the company responsible for the administration of contracts shall pass on to him all special terms appearing in contracts which will affect his dealings with subcontractors.

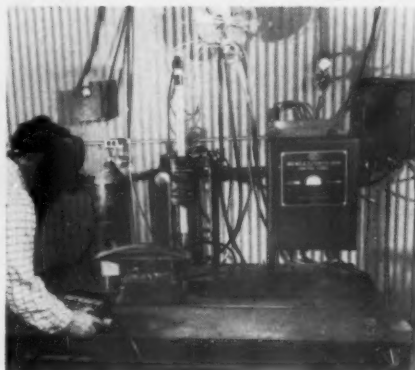
The damage that can be done by failure to closely observe the requirements of these regulations cannot be computed in dollars and cents alone. A great deal of fine work in building a reputation for efficiency can go for naught as a result of criticism arising from lack of attention to seemingly routine contract matters.

## These Ducts Won't Corrode

Haveg Industries, Inc., 900 Greenbank Rd., Wilmington, Del., is manufacturing ducts and fittings made of polyester glass reinforced plastic. They are claimed to have many properties, such as acid chemical resistance, that are superior to those of stainless steel. In addition, they are lightweight

and cost substantially less. A wide range of standard fittings and ducts is being offered in round and rectangular section. Other shapes of duct hood or stack can be produced to order.

## Providing A Completely Automatic Weld Cycle



Air Reduction Sales Co., 60 East 42nd St., New York 17, N. Y., has developed a heliweld automatic head which provides a completely automatic weld cycle. A single switch causes the holder to move downward and start the arc, and the arc is maintained

constant throughout the weld. Electronically controlled, the unit is primarily designed for d-c welding with argon or helium or a combination of both. The assembly incorporates a head with a 32" long machine holder which accommodates electrodes from .040" to 5/32" diam. up to 24" long.

## Sheet Steel Separators Can't Be Demagnetized

Sheet steel separators, designed by E. V. Nielsen, Inc., 129 Broad St., Stamford, Conn., are fully protected by a non-magnetic case from the demagnetizing influence of metal and metal dust particles. Base of the unit may be clamped to the work surface or held securely by bolts through holes in base. Stainless steel wear strips, bolts and cap nuts are used throughout to avoid shunting of magnetic field. Use of the separators reduces cost of handling sheets and eliminates double feeding of machines, effecting savings on expensive tools.

Exclusive New England  
Agent for all products  
of Cleveland Cap Screw Co.

**WRITE RITCO INTO YOUR PLANS...**

**FOR FINER FORGINGS AND FASTENERS,** let RITCO meet your design requirements . . . save you machining time and money!

Clean, accurate RITCO Forgings . . . Drop or Upset . . . are made to blueprint specifications in many metals and in weights from 1/4 to 15 pounds. Their smooth, flash-free finish and tremendous

strength make them ideal for a wide variety of uses.

RITCO also makes Special Fasteners and finished bolts and offers complete machining facilities. Ask for prices or a sample RITCO Forging.

## RHODE ISLAND TOOL COMPANY

SINCE 1834

150 WEST RIVER STREET, PROVIDENCE 1, R. I.

For More Information Circle No. 365 on Inquiry Card—Page 17



Weight  
63,600 lbs.

# PRECISION CASTINGS

GRAY IRON • ALLOY IRON • DUCTILE IRON

CEMENT BONDED SAND METHOD

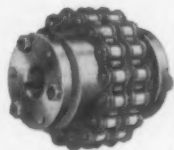
**CHAMBERSBURG  
ENGINEERING COMPANY**

"THE HAMMER BUILDERS"

161 Derbyshire Street

Chambersburg, Penna.

For More Information Circle No. 366 on Inquiry Card—Page 17



**Browning**  
**COUPLINGS**  
Strong as the shaft itself!



Machined from solid steel or malleable castings, Browning couplings offer compact design and maximum strength. Here you'll find a wide range of flexible, rigid and chain couplings employing Browning's malleable split taper bushing; also fixed bore in the smaller sizes, and a new line of minimum bore chain couplings. It's easy to choose the coupling best suited for each job, when you examine the complete Browning line.

Ask Browning Distributor or write for Catalog V169



**Browning**

**MANUFACTURING COMPANY**  
MAYSVILLE, KENTUCKY

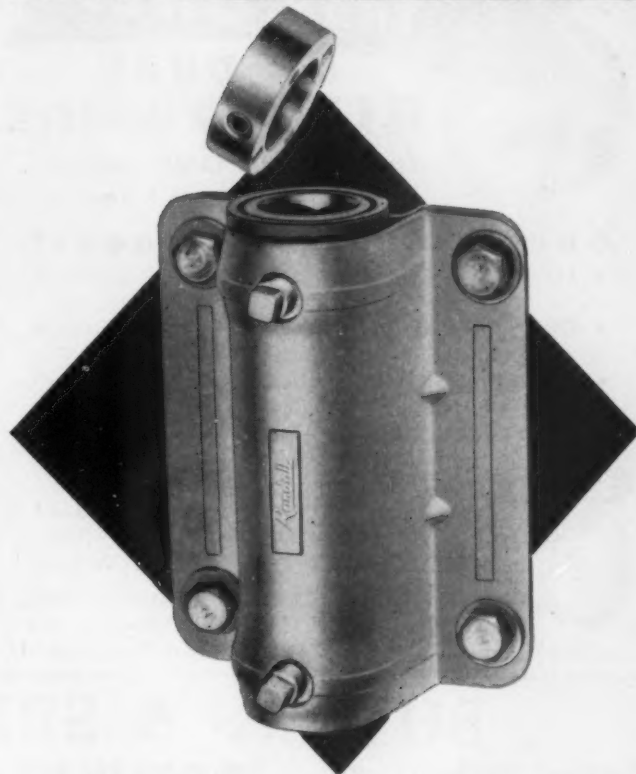
For More Information Circle No. 367 on Inquiry Card—Page 17  
AUGUST, 1956

**"new"**

**RANDALL**

# DUPLEX

**SLEEVE BEARING ASSEMBLY**



*specially designed for vertical or thrust loads*

The first self-aligning duplex bearing assembly in the low cost field. Now—the NEW Randall Duplex Bearing Assembly offers a practical, low cost solution to many vertical or thrust load problems. It is composed of a rugged housing incorporating two Randall graphited bronze bushing "Deep-Well"® ball assemblies. A special graphited flanged bushing and unique thrust collar have been designed for vertical or thrust load applications. Available in  $\frac{3}{4}$ " and 1" shaft sizes.

## it gives you these outstanding features

The efficiency of this assembly has been proven by extensive testing under all operating conditions.

Completely self-aligning, self-lubricating, quiet in operation. Pre-lubricated at the factory with Plastic Petroleum E, a long-life lubricant which greatly reduces maintenance.

Long, trouble-free service. Housing finished in corrosion resisting baked aluminum paint. Lends itself to simple, low-cost mountings and blends with functional, modern designs.

## for horizontal application

Does not require ball assembly with special flanged bushing or thrust collar.

Choice of quality graphited bronze bushings or the low-cost sintered bronze.

Choice of pre-lubricated Plastic Petroleum E, oil or grease style lubrication. Range of shaft sizes  $\frac{1}{2}$ " to 1".

BRONZE BAR STOCK

BRONZE BUSHINGS

PILLOW BLOCKS

SHEET LUBRICATOR

GRAPHITED BEARINGS

THRUST WASHERS

SAFETY COLLARS

BRONZE CASTING



**RANDALL GRAPHITE BEARINGS, INC.**

**1014 South Greenlawn Avenue, Lima, Ohio**

For More Information Circle No. 368 on Inquiry Card—Page 17



in Wheels, too...



### Gain These Advantages:

- **LOWER COST**—Reduce wheel cost! Buy Dual wheels for less than one single conventional type!
- **GREATER FLOTATION**—More tire surface on the ground. Spreads load suspension!
- **EQUAL or GREATER LOAD CAPACITY**—Load weight is distributed!
- **BETTER TRACTION**—On wet or dry surfaces; more tire gripping area!



- **DESIGN DISTINCTION**—More substantial appearance! Offers new design possibilities!

**STOCK SIZES, TYPES — Or CUSTOM BUILT!**

**ALLIED Wheel Products, Inc.**

Dept. P • 27 Broadway • Toledo 4, Ohio

For More Information Circle No. 369 on Inquiry Card—Page 17

## TO PURCHASING DEPARTMENT PERSONNEL

**AT THE PRESENT** you are reading a copy of Purchasing Magazine most likely addressed to the head of your department . . . or an assistant.

**YOU WELL KNOW** that the contents of this publication definitely helps you do a better purchasing job.

**KEEPING YOU INFORMED** on trends and new ideas, Purchasing helps you prepare for advancement within your company.

**YOU SHOULD** have your own personal copy to completely digest the articles—and to have your own file copies always available for immediate reference.

**TO HELP YOU** get your own copy, we have inserted in this issue of PURCHASING, a special order blank. It is for YOUR use! Tear it out . . . fill in your name . . . and mail, postage free, to PURCHASING MAGAZINE, 205 E. 42 Street, New York 17, N. Y.

**WE SHALL** then enter a one year subscription for you and bill you (or your company) at a later date—at the one year rate of \$4.00.

**MAIL IT TODAY!**

## BUYER'S & SELLER'S MART

Contract Work •

Equipment For Sale •

Employment and Business Opportunities

### HELP WANTED

#### CHEMICAL BUYER

Large midwestern oil company has a position available in Cleveland, Ohio, for a man 25 to 35 years of age whose major responsibility will be the purchase of chemicals.

Experience in buying activities and a college educational background in chemistry are preferred.

This position offers good opportunities for salary and advancement. Substantial employee benefits and excellent working conditions.

Send full particulars including education, experience, personal data and references.

Write Box 1469, Purchasing, 205 East 42nd St., New York 17, N. Y.

#### ASSISTANT PURCHASING AGENT CONTAINERS AND PACKAGING

Excellent opportunity in head office for a man with extensive industrial experience in the procurement of all types of containers. Must be thoroughly familiar with packaging, packaging equipment and supplies, with knowledge of material handling. Administrative experience and negotiating ability important. Applicant must be able to coordinate related functions between departments, establish specifications, promote standardization, etc. Please submit complete resume and state salary desired. All replies held in strict confidence.

Personnel Dept., Amer. Cyanamid Co.  
30 Rockefeller Plaza, New York 20, N. Y.

### WANTED MISPRINTS—OVERRUNS JOB LOT-CORRUGATED

Why sell valuable footage for Waste? We buy overruns, production mistakes & obsolete sizes at top prices. It will pay you to investigate our offers. For quick service contact:

Louis Lambert Inc. 30 W. 21 St., N.Y.C.  
ORegon 5-2878

### POSITIONS WANTED

#### PURCHASING AGENT AVAILABLE

**ELECTRONICS** 6½ years diversified solid experience in procurement of military and commercial material for manufacturer of electronic equipment. Also experienced in purchasing for leading electronics export firm. Heavy background in production scheduling, expediting, project buying, inventory systems, bid preparation and evaluation. Able to read prints, prepare bills of material and familiar with government specs. Intimate knowledge of electronic markets and vendors. Smart trader. College graduate with B.S. in business and one year of engineering. Seeks change for more responsibility and challenge. Will locate N.Y.C., New Jersey, Conn., or Long Island. Write Box 1494, Purchasing, 205 East 42nd St., New York 17, N. Y.

**PURCHASING AGENT**, Canadian, seeking permanent position with future in U.S. Fifteen years experience in Administrative and Purchasing positions, University educated, top references. Broad knowledge of foods and frozen foods. Write for detailed resume to Box 1495, Purchasing, 205 East 42nd St., New York 17, N. Y.

Available

#### PURCHASING AGENT

4 years supervisory, 16 years experience procurement of castings, forgings, basic metals, screw machine parts, components. 8 years instructor of college purchasing course. Will furnish resume. Prefer Cleveland, Ohio location. Write, Box 1497, Purchasing, 205 East 42nd St., New York 17, N. Y.

#### MECHANICS FILES

Highest Prices Paid for your old used files, also surplus files.

#### BIRD SPECIALTY CO.

70 North 8th St., Brooklyn 11, N. Y.

#### LP GAS INSTALLATIONS and ANHYDROUS AMMONIA PLANTS

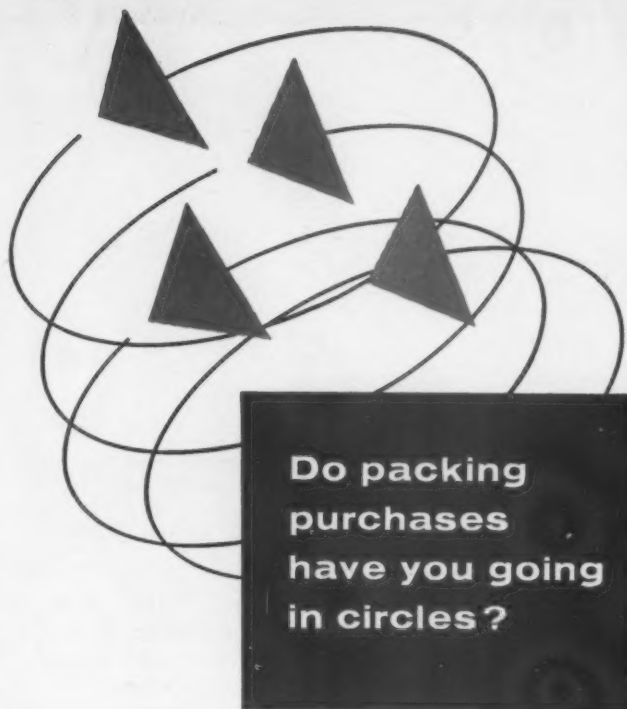
Designed & Installed

"There's No Substitute For Experience"

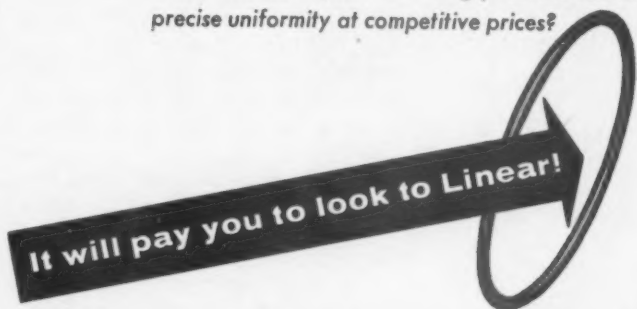
#### PEACOCK CORPORATION

Paul E. Peacock, Jr., Pres.

Box 268, Westfield, N. J.



*Need large quantities in a hurry? Need precise uniformity? Stability in difficult fluids or thermal extremes? Or is your "O" ring problem one of precise uniformity at competitive prices?*



You can count on LINEAR for effective, up-to-date solutions to packing problems. In the past five years, LINEAR has pioneered such outstanding developments as:

**VEE-DAM Rings**—Leakproof V-Ring Packings that eliminate labyrinth flow

**ROTO-MOLD "O" Rings**—Automation in a new and novel automatic process that combines speed and perfect quality at low price!

**NEW COMPOUNDS**—Through pioneer research utilizing the latest polymers and elastomers, LINEAR is now providing the answer to many sealing problems involving fluids which cause accelerated breakdown of molded parts at elevated temperature levels.

Whatever your packing problem, it will be well worth your while to consult LINEAR—pioneer and leader in molded ring packings and other molded components.



For More Information Circle No. 371 on Inquiry Card—Page 17  
AUGUST, 1956

## SOCKET SCREW ENGINEERING DATA

# New socket set screw facilitates automatic assembly

**Screw design with full-length socket eliminates slow, tedious handling of tiny set screws**

Slow production, operator fatigue, large floor area requirements are a few of the difficulties encountered with hand assembly of components fastened by small wire-size socket set screws.

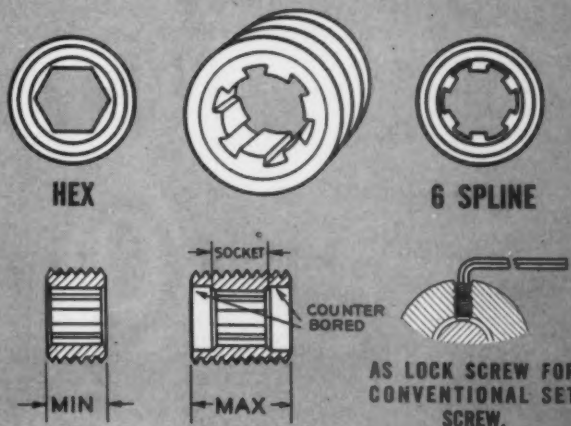
Bristol's new, patented Thru-Broached socket set screw overcomes all of these difficulties by making automatic assembly of the small screws practical. The socket goes entirely through the center of the new screw so that it can be wrenched from either end with equal ease, facilitating hopper feed (either end up) to an automatic power screw driver.

Hopper feeding and power driving increase the rate of assembly and reduce the required assembly bench area. Operator fatigue is alleviated with automatic handling of the tiny fasteners. What's more, cross-threading of small screws is greatly reduced.

The holding power of these new screws equals that of conventional cup-point socket set screws; thus they're interchangeable with conventional screws of the same diameter. Write for complete data on this outstanding new socket set screw.

A-6.10

## BRISTOL'S THRU-BROACHED SOCKET SCREW



Precision Socket Screw Manufacturers Since 1913



\*Made in sizes as small as No. 0 in Alloy Steel and Stainless Steel. Cap Screws up to 1½"

THE BRISTOL COMPANY, Socket Screw Division, Waterbury 20, Conn.

For More Information Circle No. 372 on Inquiry Card—Page 17

# letters

## LUMBER FROM WOOD WASTE

After reading the article on "Low Cost Lumber from Wood Waste" in the April issue of *PURCHASING*, it seems that possibly we could have an application for material of this nature as filler strips or insulation spacers in our line of refrigerated truck bodies. Can you give us the names of two or three firms in our area, making this material in thickness of one through two inches?

Paul Adam, Pur. Dept.  
Hercules Mfg. Co.  
Evansville, Indiana

Would you be kind enough to forward me information as to where I could contact the manufacturer of this type of wood so that I can secure additional information and samples, as this material may have merit and value in some of our needs.

F. L. Wagner, Pur. Agt.  
Merchants Biscuit Co.  
Omaha, Neb.

• "Particle board" as described in this article is commercially produced by the following manufacturers:

Granite Board, Inc., Goffstown, N. H.  
Souhegan Mills, Wilton, N. H.  
Dixie Chipboard, Rural Hall, N. C.  
Cavalier Corp., Chattanooga, Tenn.  
Crossett Industries, Crossett, Ark.  
Southern Plaswood Corp., Hope, Ark.  
Sencore Industries, Fernwood, Miss.  
Wynnewood Products, Jacksonville, Texas  
Swain Industries, Seymour, Ind.  
Jasper American Co., Henderson, Ky.  
Wabash Screen Door Co., Minneapolis, Minn.

In addition to these, we have information on eight plants now under construction located in Pennsylvania, Virginia, North Carolina, Michigan, Minnesota, and Mississippi. A number of the larger furniture manufacturers also use this process, but produce only for their own needs.

Equipment for the process is obtainable from the following:

### Multi-Opening Platen

Miller-Hofft Co., Richmond, Va.

Columbia Engineering Co., Corvallis, Ore.

Wilco Machine Works, Memphis, Tenn.

International Dryfibre Process Co., New York, N. Y.

Clinton Engineering Co., Antrim, N. H.

### Continuous Press

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## HELPFUL ARTICLE

You may be interested to know that we have had quite a number of inquiries with respect to the article entitled "Three Practical Ideas that Simplify Purchasing", which appeared in your March issue. The inquiries came from various parts of the country, from the East to West Coast, and sought further information on forms covering all three of the systems we have employed in our simplified approach to industrial procurement.

F. J. MacDougall  
Asst. to Director of Purchases  
Allis-Chalmers Mfg. Co.  
Milwaukee, Wisconsin

## SIGNATURES ON ORDERS

I am enclosing a copy of the purchase order form we are presently using. As you will see, there are two forms. One is the original that is used for a large majority of our purchase orders, which contains all of the terms and conditions. The other form is used for changes, cancellations, or continuation sheets of the original purchase order. My question concerns the need for a signature on this second sheet. Of course, I realize that if we are making a change or cancelling the basic purchase order, and this is sent to the vendor by itself, it would be signed. But if the basic purchase order should consist of two or three pages, should my

signature appear on the first page only, on all pages, or on the last page only?

M. K. Barrett, Jr., Pur. Agt.  
Educational Testing Service  
Princeton, N. J.

• The general rule is that all pages making up one complete document are included "by reference". One signature should therefore comply with this requirement. However, factors of expedience and prudence are also involved in this query. Our legal consultant advises:

"There is no definite answer until something happens or an order 'goes wrong', but to avoid potential trouble you would certainly be open to no criticism in signing all the pages of both the order and any amendments or changes.

"Without such signatures there are two apparent possibilities. One is the old statute of frauds under which a contract for more than fifty (in some states a larger amount) dollars is void unless there is 'a memorandum in writing signed by the person to be charged', or part payment or part delivery.

"The other possibility is the rule that collateral memoranda cannot vary the terms of a written contract. Should your basic purchase order carry your signature, and it be later changed or modified by an unsigned memorandum, the situation might also run afoul of that rule."

## INTERESTING, EDUCATIONAL

I would appreciate receiving 15 reprints or tear sheets of the article, "Techniques of the Interview" by C. T. Hardwick, from the June issue of *PURCHASING*. Your magazine continues to present articles of interest and education for purchasing personnel, and by separate letter I am ordering subscriptions for four of our key buying personnel at this division. I have been particularly interested in the articles by Louis DeRose, as he conducted a very successful training program for us a short time ago.

G. L. Duke, Mgr. of Pur.  
Aviation Gas Turbine Div.  
Westinghouse Electric Corp.  
Kansas City, Mo.





**Question about quality?**

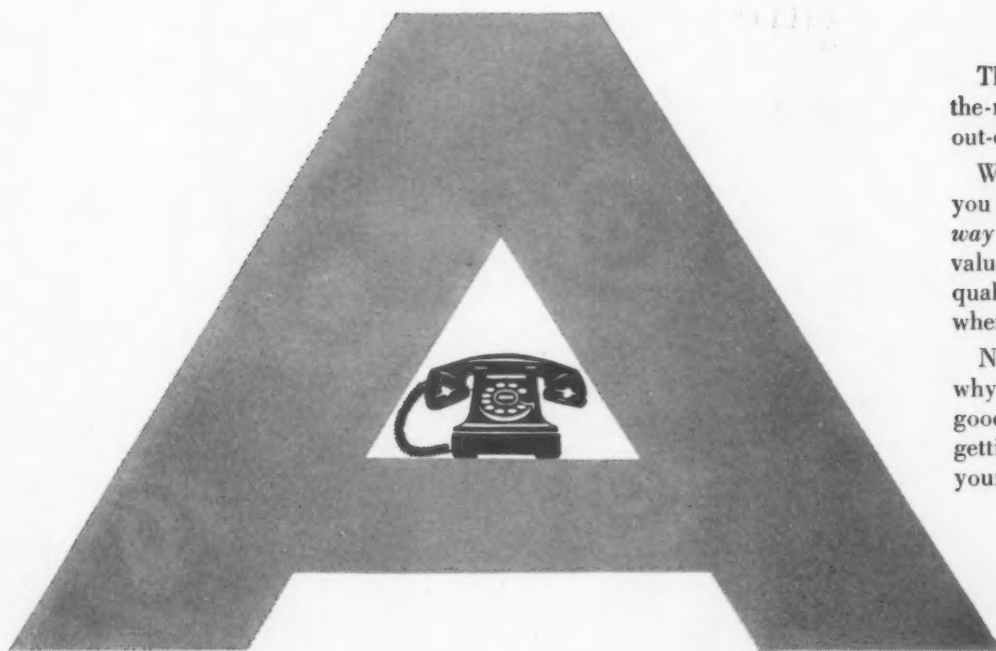
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**Uncertain about  
a delivery date?**

**What kind of service  
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**Get the right answers right now by telephone**



The quick, easy way to get up-to-the-minute purchasing facts from out-of-town sources is by telephone.

What's more, the telephone gives you the advantage of *personal, two-way* contact. And you know the value of talking over price, terms, quality, delivery and other factors when you buy things.

Next time you are in the market, why not try the telephone? It's a good way to make sure you are getting the most and the best for your money.

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# **American** is the name!

In your actual cost of modern fasteners are four things:

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| <b>1. PRICE</b>   | <b>3. QUALITY</b>  |
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It is possible, as prices fluctuate, there may be places you can get a price differential at the moment. But no one gives you more of all four plus features than American.

**American gives you  
more of all four**

Certainly in service, where precision American deliveries keep any production line on schedule

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Certainly in quality where qualitative checks at American are unmatched in the industry in such key areas as raw material identification and evaluation.

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Nowhere will you find more of the four basic product features you want than from American — price, service, quality, research.

**Make your own comparisons...** send us your inquiry for price and delivery or your specifications for special fasteners. Write:



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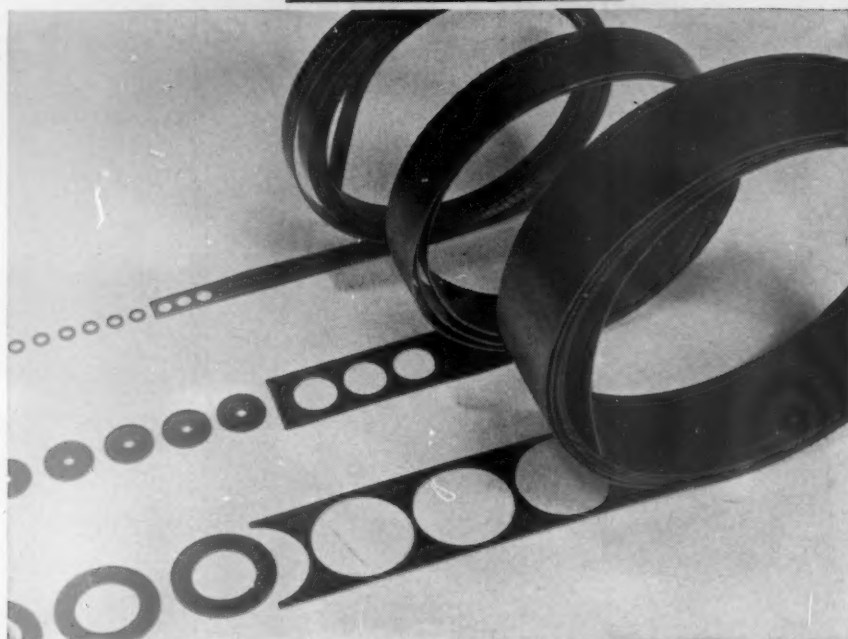
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AUGUST, 1956

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# POLYPENCO® NYLON SHAPES



## NYLATRON® GS Nylon Thrust Washers

Resist Wear • Reduce Noise

Provide Smooth Operation Without Lubrication

NYLATRON GS Nylon thrust washers—rapidly stamped from coiled strip—outlast other materials wherever there are thrust loads between metal parts—such as in fractional horsepower motors.

### NYLATRON GS:

A molybdenum disulphide filled nylon\* formulated to expand the field for nylon. It has a higher heat distortion temperature and lower thermal expansion than standard Nylon 101, combined with a lower coefficient of friction and higher wear resistance in many applications.

### HIGHEST QUALITY:

You can expect highest quality nylon with POLYPENCO stock shapes... freedom from porosity, uniform properties and maximum dimensional stability.

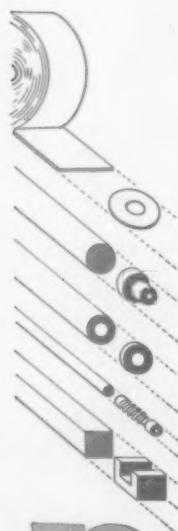
### STOCK SHAPES READILY AVAILABLE:

POLYPENCO Nylon stock shapes are available in rod, strip, tubular bar, tubing and slab. POLYPENCO standard and special nylon formulations are easily machinable on metalworking equipment.

### FABRICATED PARTS:

Fabrication service is available for your parts—engineered for the best in design, quality and tolerance. Write to the Technical Service Department for help on your application.

THE POLYMER CORPORATION OF PENNA. • Reading, Penna.  
Export: Polypenco, Inc., Reading, Penna., U.S.A.



**p**  
**POLYPENCO**

Nylon, Teflon†, Q-200.5 (cross-linked polystyrene) and K-51 (chlorinated polymer)

\*PATENTS APPLIED FOR  
†DU PONT TRADEMARK

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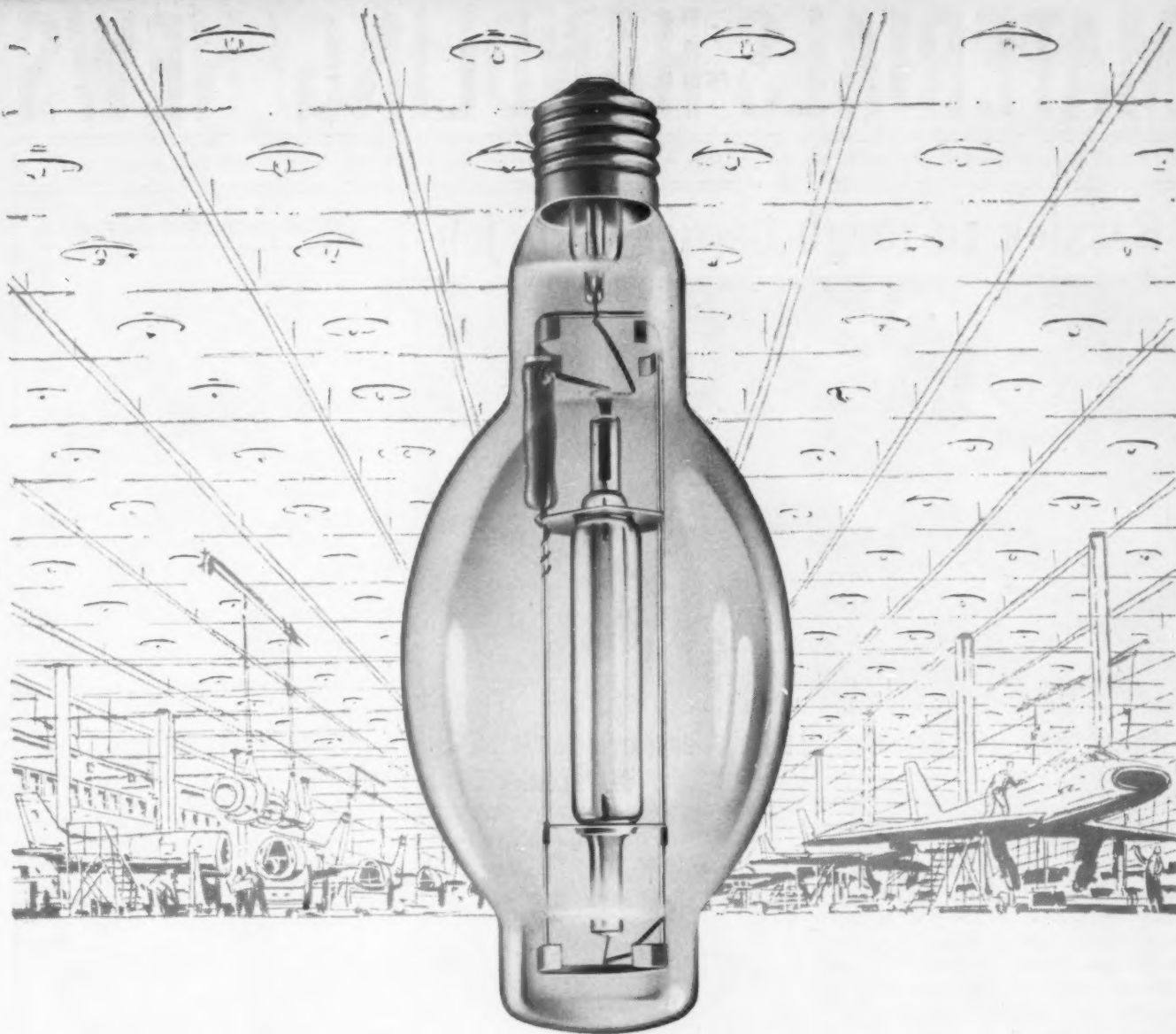
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## 40 feet up...yet all the light you need at "SEE" level!

Lighting fixtures and lamps must be way up high in airplane factories, steel mills, sports arenas and similar buildings. This means that lamps must be unusually powerful for sufficient light to reach the floor area.

Among the most efficient light sources ever developed for "high bay" uses is the Sylvania Mercury Vapor Lamp. It gives brilliant blue-white light that has high illuminating power. What is more, this remarkably efficient lamp gives

more light per operating dollar than practically any other lamps suitable for high bay operation.

For special applications, where color appearance is important, the Sylvania Color-Improved Mercury Vapor Lamp is particularly useful.

Because of their outstanding economy of operation and high output of usable light, Sylvania Mercury Vapor Lamps are widely used for street and highway lighting, too . . . helping to keep your

taxes down, making nighttime driving safer.

If you have a lighting problem you believe Sylvania Mercury Vapor lighting will solve, phone or write your nearest Sylvania office. For technical and application data, write directly to:

**SYLVANIA ELECTRIC PRODUCTS INC.**  
Lighting Division, Salem, Mass.

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University Tower Building, Montreal

# SYLVANIA

*...fastest growing name in sight*

LIGHTING • RADIO • ELECTRONICS • TELEVISION • ATOMIC ENERGY

For More Information Circle No. 376 on Inquiry Card—Page 17

August, 1956

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# MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

## Bassick on tough Carrier Corp. job



### Longer wear from Bassicks

Policing a 1.5 million square foot production area at Carrier's huge Thompson Road plant near Syracuse, N. Y., means removing 50 tons of refuse a day.

Mobilizing a fleet of 250 trash trailers requires casters that can take punishment. They have to carry quarter-ton loads without damage to asphalt paving. They've got to stand up when pulled over railroad sidings, (above) door sills and unpaved areas at tractor speeds of 10 to 12 mph. Carrier reports that the new Bassick Floating Hubs are especially durable and have proven their ability to handle rugged assignments. Providing long wear and low maintenance, the Bassick casters also eliminate damage to floor areas.

### Floating-Hubs pass destruction test



Before accepting Bassicks, Carrier tested them on two all-metal 3000 lb. payload sledges. Conventional casters had lasted one day at this job. The test Bassick Floating-Hubs are still in use today after more than ten months. Confident and satisfied with Bassick dependability, Carrier maintenance men actually weld the casters (above) to the trash trailers.

### Bassick assembly line for BarcaLonian chairs



Assembly line production—unusual in the manufacture of upholstered furniture—is the big news at Barcalo Manufacturing Company's new Buffalo plant. At capacity, 200 BarcaLonian chairs a day will be rolling through the new production line—on Bassick grooved-wheel casters over inverted angle-iron tracks. Perhaps you could use Bassick grooved-wheel casters to set up efficient, economical assembly line production in your field?



**Explosion Proof Surgical Light** made by Wilmot Castle Company, Rochester, N. Y., uses Bassick Casters for mobility. The Bassick conductive wheels ground static charges, eliminate danger of sparks near explosive anaesthetics.

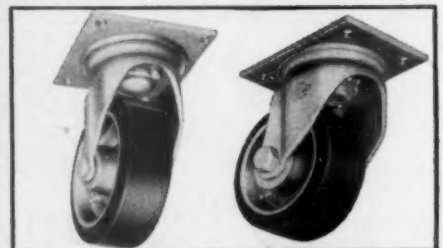
### Man-powered casters



**The Ballista**, an ancient form of cannon, used to fire giant arrows against walled towns, was sometimes propelled by caging a man inside each wheel. Today, Bassick casters can be one of the big guns in your attack against high materials-handling costs. Talk to your industrial distributor about Bassick casters. He can help you . . .

### Cut costs two ways

He'll keep you up to date on new efficient materials-handling methods—like Barcalo's assembly line to the left. He'll bring new cost-saving products to your attention—like Bassick's S99 and H99 sealed casters shown below.



H99 Medium Heavy  
duty sealed casters

S99 Heavy duty  
sealed casters

### No lubrication problems

You can eliminate slick floor hazards, and put lubrication maintenance on a once-a-year basis with Bassick's sealed construction. A baffle ring keeps dirt out and retainer cup keeps grease in swivel bearing. Wheel bearing seal excludes foreign matter, seals in grease. Alemite fittings allow you to flush out old, ineffective lubricant.



THE BASSICK COMPANY  
Bridgeport 2, Conn.  
In Canada: Belleville, Ont.

**Bassick**

A DIVISION OF



MAKING MORE KINDS OF CASTERS... MAKING CASTERS DO MORE



*Here!*

**You'll dry faster with  
FORT HOWARD  
PAPER TOWELS!**



Whether social necessity or the manager dictates, "Take a shower!" people everywhere rely on Fort Howard Paper Towels to dry faster, better. *You'll* like them, too! And Fort Howard Stabilized Absorbency keeps towels fresh and fully absorbent regardless of age.

That's why your best bet in paper towels is *Fort Howard*. 18 different grades and folds assure low-cost user satisfaction for *every* type of washroom. Rely on your Fort Howard distributor salesman to recommend the towel service which suits *your* needs!



**FORT HOWARD PAPER COMPANY, Green Bay, Wisconsin**

*For 37 Years, Manufacturers Of Quality Towels,  
Toilet Tissue and Paper Napkins*

## 65-year test

directs choice of valves for new Rochester home of

## WILMOT CASTLE COMPANY



Architect: CARL L. TRAVER    General Contractor: JOHN B. PIKE & SON, INC.  
Heating Contractor: HOWE & BASSETT CO.    Plumbing Contractor: BAREHAM CONTRACTING CO.

### JENKINS VALVES

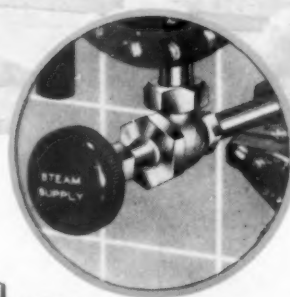
qualify on long record of reliable performance as standard equipment on Castle Sterilizers since 1890.

The Wilmot Castle plant at Rochester, N. Y., completed in 1955, was planned with the same exacting standards applied to design of Castle's fine products — sterilizers and surgical lamps for hospitals, laboratories, and the medical and dental professions.

In selecting valves for the plant, the company could depend on their long experience with the faultless performance of the valves used on Castle Sterilizers, recognizing that all Jenkins Valves — bronze, iron, steel, and corrosion resistant — are made to the same high standards.

For both plant and product, the time-proved extra value of Jenkins Valves is dependable assurance of lasting efficiency, safety, and operating economy. Jenkins Bros., 100 Park Ave., New York 17.

THE HOSPITAL LABORATORY AUTOCLAVE illustrated is one of the many types of Castle Sterilizers used in hospitals and laboratories, and shows typical use of Jenkins Valves on the steam, water supply, and drain lines. Valves are renewable composition disc type, and have special heat-resistant, non-staining Bakelite handles, with each valve's function moulded in the top. Jenkins Valves provide the sturdy construction, safety, and good appearance required. They also permit quick, easy maintenance, since the renewable discs, made also by Jenkins Bros., are available anywhere from Jenkins Distributors.



**JENKINS**  
LOOK FOR THE JENKINS DIAMOND  
**VALVES**



*Jenkins Bros.*

SOLD THROUGH  
PLUMBING-HEATING  
AND INDUSTRIAL DISTRIBUTORS